


1985 CLIENT CONFERENCE

INPUT



Digitized by the Internet Archive
in 2016 with funding from
Peter Cunningham

<https://archive.org/details/1985clientconfer01unse>

1985 Client Conference

Information Systems: The Competitive Weapon

Claremont Resort Hotel
Oakland, California

August 20-22, 1985

INPUT
1943 Landings Drive
Mountain View, CA 94043
(415) 960-3990

INPUT
11820 Parklawn Drive
Suite 201
Rockville, MD 20852
(301) 231-7350

INPUT
Park 80 Plaza West-1
Saddle Brook, NJ 07662
(201) 368-9471

AGENDA

INFORMATION SYSTEMS AND SERVICES: COMPETITIVE WEAPONS FOR SUCCESS

August 20-22, 1985
Claremont Resort Hotel
Oakland, California

Monday,
Aug. 19

Hospitality Suite - 7 p.m.-10 p.m.

Tuesday,
Aug. 20

**Continental Breakfast/Registration -
7:30 a.m.-8:30 a.m.**

Session 1

8:30 a.m.-9:45 a.m.
Empire Room

Strategic Considerations for Information Systems and Services

Peter Cunningham
President, INPUT

- Organization and People Concerns
- Changing Buying Patterns
- Is IS Strategically Important?

Session 2

9:45 a.m.-10:45 a.m.
Empire Room

Software and Services Industry Challenges

Robert F. Berland
Director/Strategic Planning, IBM Information Services

Customer and Industry Perspectives on:

- End-User Computing
- Professional and Network Services
- Software

10:45 a.m.-11:00 a.m.

Break

Session 3

A

11:00 a.m.-12:00 p.m.
Napa 3

Directions 1989: Computer Industry in Transition

Ronald Weeks
Senior Product Manager, Architecture and
Business Planning
Cincom Systems, Inc.

Mr. Weeks will discuss the importance of MIS to the strategic planning of the organization. He will review industry trends with emphasis on:

- Application Systems
- Data Base
- Data Communications
- Operating Systems
- Hardware Technology

Empire Room

B

Mergers, Acquisition and Strategic Partnering: Not an Option

Edward I. Metz
Partner, Broadview Associates

Expand market coverage to meet single-source service goals - while reducing the risks associated with formal mergers or acquisitions.

Horizon Room

Lunch 12:00 p.m. - 1:00 p.m.

Session 4

1:00 p.m.-2:00 p.m.
Napa 3

A

Workshop: Micro-Mainframe: Catalyst to Departmental Processing

I. Steven Kerns
Director, Information Systems Research,
INPUT

The end-user computing revolution has created an excessive demand for corporate information, but it is really a symptom of the problem of information dissemination. The authors of INPUT's 1985 reports on the subject will discuss the tactics and strategies required to successfully deal with the latest manifestation of this symptom, end-users' demand for micro-mainframe access.

Empire Room

B

Electronic Data Interchange: Opportunities and Challenges

David Rousseau
Staff Vice President/Marketing,
McDonnell Douglas Information Systems Group

- Driving Forces affecting vendor strategies
- Impact on vertical market strategies

Session 5

2:15 p.m.-3:15 p.m.
Napa 3

Roundtable: Shared Office Systems - How Much, How Soon?

Micro-Mainframe: Catalyst to departmental processing discussion continued.

Lanai 2/Horizon

Cocktails/Dinner - Beginning at 7:00 p.m.

Wednesday,
Aug. 21

Continental Breakfast - 8:30 a.m.

Session 6

8:45 a.m.-9:45 a.m.
Empire Room

Harnessing Leading Edge Technology to Achieve Integration and Connectivity Goals

Jack Armstrong
Manager of Product Planning
Cullinet Software, Inc.

Mr. Armstrong will detail the key issues software companies face in meeting integration and connectivity demands, referencing Cullinet's own market experiences.

Session 7

10:00 a.m.-11:00 a.m.
Empire Room

Expert Systems: A Focus on Value

Harry Reinstein
President, AION

Prior to joining AION, a Palo Alto, California-based Artificial Intelligence firm, Mr. Reinstein spent twenty years at IBM, where his work emphasized large systems development. During this session he will discuss current AI applications, how they can enhance support activities, and the state of the market for AI.

Session 8

11:00 a.m.-12:00 p.m.
Empire Room

The Lotus Time Bomb

Dave Davison
President, IMEDIA

- Corporate De Facto Standard Without Controls
- Success of LOTUS as a productivity tool
- Group productivity problem: The proliferation of desktop software
- The need for group interconnection

Horizon

LUNCHEON PROGRAM: 12:00p.m.-1:30p.m.

Using Computers Productively in the Workplace - The Human Factors

Craig Brod

Mr. Brod is an industrial psychologist and the author of "Technostress: The Human Cost of the Computer Revolution." Mr. Brod serves as a consultant to companies introducing new technologies into their workplaces and also designs software programs for novice computer users. He lectures at the University of California Berkeley continuing education program for business professionals.

Session 9

1:30 p.m.-2:15 p.m.
Napa 3

A

End-User Training: A Path to Success

Doug Taylor
Consultant

Without a constructive, well planned end-user training program, end-user computing will not pay the benefits expected in today's corporation.

Empire Room

B

Information Services Vendor CEO Panel: The Road Ahead - Business Challenges and Solutions

Peter Cunningham
President, INPUT

Jack Courtney
President, Computer Task Group

David Liddle
Chairman and CEO, Metaphor Computer Systems

John Ryan
Chairman, SunData Corporation

2:30 p.m.-6:00 p.m.
Napa 1 & 2

Hands-On Demonstration: The New Technologies

Product demonstrations from AION Corporation, Metaphor Computer Systems and IMEDIA will be on display. In addition, Javelin Software Corporation will demonstrate a milestone in business planning and analysis software, a technology which is expected to replace spread sheets. This product has been in early use at ten of the largest corporations in America including Citibank, Bank of America, General Electric and United Airlines.

Session 10

2:30 p.m.-3:30 p.m.
Napa 3

A

Roundtable: The Changing IS Organizational Structure

Ralph L. Wells
Senior Consultant, INPUT

During this roundtable, participants will share their experiences in shaping internal IS organizations to meet the increasing needs of end users for PC support, Information Centers and Decision Support.

Empire Room

B

New Directions In Software Products: A Scenario for Future Success

Jack M. Keen
Principal Consultant, INPUT

The software products marketplace offers enormous opportunity, but only to vendors willing to stay responsive to rapid change. This session will bring attendees up to date on the new aspects of this exciting marketplace and will suggest keys to success required for vendors desiring to set their course for the rest of this decade.

Thursday,
Aug. 22

Session 11

8:30 a.m.-9:15 a.m.
Empire Room

Future INPUT Directions

Peter Cunningham
President
INPUT

Peter Cunningham will take a look at past INPUT projections and analyze what has happened. This will lead to a discussion on the overload in Information Services and the direction INPUT research will take in the next year to address this "Information Overload".

Session 12

9:15 a.m.-10:15 a.m.
Empire Room

Universal Information Services

Arnold Heiber
Manager, Advanced Network Market Planning
and Strategy, AT&T
The future of Information Networks.

10:15 a.m.-10:30 a.m.

Break

Session 13

10:30 a.m.-11:30 a.m.
Empire Room

A

Successfully Marketing Information Systems within Your Organization

Joseph Cline
Division Staff Manager,
Southern New England Telephone Company

Edward E. Lisi
Staff Manager, Corporate Relations
Southern New England Telephone Company

Mr. Cline and Mr. Lisi will demonstrate how to
apply the strategies that SNET has used to
successfully market information systems within
its company.

B

The Value of Third-Party Maintenance

Graham Kemp
Vice President
INPUT

Customer and Market Perspectives in:

- Third-Party Maintenance Revenue Growth,
1985-1990
- Third-Party Maintenance Market in Transition

Session 14

11:30 a.m.-11:45 a.m.
Empire Room

Conference Wrap Up Conclusions and Suggestions

ATTENDEES

A T & T

George Jones
Allen Miles
Christine Seltzer
Patricia Siegel

AMERICAN HOECHST

Stephen Pook

BANK OF AMERICA

Stan Dunlap
Robin Fleming
Nancy Knight
Steve O'Brien
Gary Satterfield

BELL ATLANTIC

Gerard Caccappolo
M. McGrew
Karen Strouse

BELL SOUTH

Mike Mee

BOEING COMPUTER SERVICES

Leroy Allen
Ralph Blohm
Barbara Flaherty
Craig Haines

CIGNA CORP.

Nancy Wendt

CINCINNATI BELL

Ted Cwiok

CINCOM

Dick Kleinberg

CITICORP/CITIBANK

David Anderson

CLARK-O'NEILL, INC.

John Gomez
Brian Lewis

COMPUTER SCIENCE CORP.	Karen Kuhlman Al Weaver
COMPUTER TASK GROUP	David Ehlke
CONTROL DATA CORP.	Patrick Delaney
DIGITAL EQUIPMENT CORP.	Steve Weiss
EDUCATIONAL TESTING SERVICE	Bart Perlman Jessie Webb
ELECTRONIC DATA SYSTEMS	Vern Olson Virginia Sender
FIRST DATA MANAGEMENT	Bill Adams Gary Bunch
FIRST NATIONAL BANK OF CHICAGO	Donald Kilpatrick
FIRST NATIONAL BANK OF LOUISVILLE	John Hoagland
GEAC COMPUTERS INC.	Gary Lockwood
GE INFORMATION SERVICES	James Taylor
GENERAL ELECTRIC CO.	John Neuenschwander

GTE DATA SERVICES

Dan Center
Richard Grawbowski
Betty Holroyd

GTE TELENET

Marilyn Bardsley

HOGAN

Robert Padgett

IDC SERVICES, INC.

George Brenner
Joel Roth

INFORMATION ASSOCIATES

Joe Nelson
John Robinson

INTERLOGIC TRACE INC.

Jack Owen

IBM

Angelo C. Forlenzo
Ron Hargreaves
Joseph Hendrix
Richard Lowenstein
Leornard Naphtali
Bryan Warman

JAVELIN SOFTWARE

Stan Kugle
Pat Maroni

LITTON

John Cudworth
Les Fondiler
Bob Houston
David Williams

LOCKHEED CORP.

Alan R. Curtis
Robert R. Paul
James Wick

MANAGEMENT SCIENCE AMERICA

Jerry Goldstein
David Marshall

INPUT

MANUFACTURERS HANOVER TRUST	Mark Linder
NORTHROP CORPORATION	Bernie Slotnick
RYDER SYSTEMS INC.	William Linden
RYDER TRUCK RENTAL	Scott Ambler Jack Mellon
SCHERING PLOUGH	Mike Studney
SORBUS	Bob Walters
SOUTHERN NEW ENGLAND TELEPHONE	Joseph Cline
SQUARE D COMPANY	Herman Zwirn
STERLING SOFTWARE	Phil Moore
SUNDATA CORP.	John Ryan
TRW, INFORMATION SERVICES	Al Duey
U.C. BERKELEY	Jim Dolgonas Richard West
U.S. WEST, INC.	Sally Smith Winston Wade

U.I.S. COMPANY

Al Klein

VISA USA

Brian Ruder

INPUT

SPEAKERS

Peter Cunningham
Jack Keen
Graham Kemp
Steve Kerns
Ralph Wells

INPUT

Harry Reinstein

AION

Arnold Heiber

A T & T

Edward Metz

BROADVIEW ASSOCIATES

Ronald Weeks

CINCOM SYSTEMS, INC.

Jack Courtney

COMPUTER TASK GROUP

Craig Brod

CONSULTANT

Doug Taylor

CONSULTANT

Jack Armstrong

CULLINET SOFTWARE, INC.

Robert Berland

IBM

Dave Davison

IMEDIA

David Rousseau

MCDONNELL DOUGLAS, INFORMATION
SYSTEMS GROUP

David Liddle

METAPHOR COMPUTER SYSTEMS

Edward Lisi
Joseph Cline

SOUTHERN NEW ENGLAND
TELEPHONE COMPANY

INPUT

INPUT®

**STRATEGIC CONSIDERATIONS
FOR INFORMATION SYSTEMS
AND SERVICES**

**Peter A. Cunningham
President
INPUT**

STRATEGIC VALUES

- **Information**
 - **Information Systems (IS)**
 - **Information Technology (IT)**
-

HOW MUCH SHOULD YOU SPEND?

**WITHOUT CHANGE
THERE IS NO BENEFIT
FROM I.S.**

STRATEGIC IMPACT OF INFORMATION

- **Changing Cycles**
 - **Planning**
 - **Accounting**

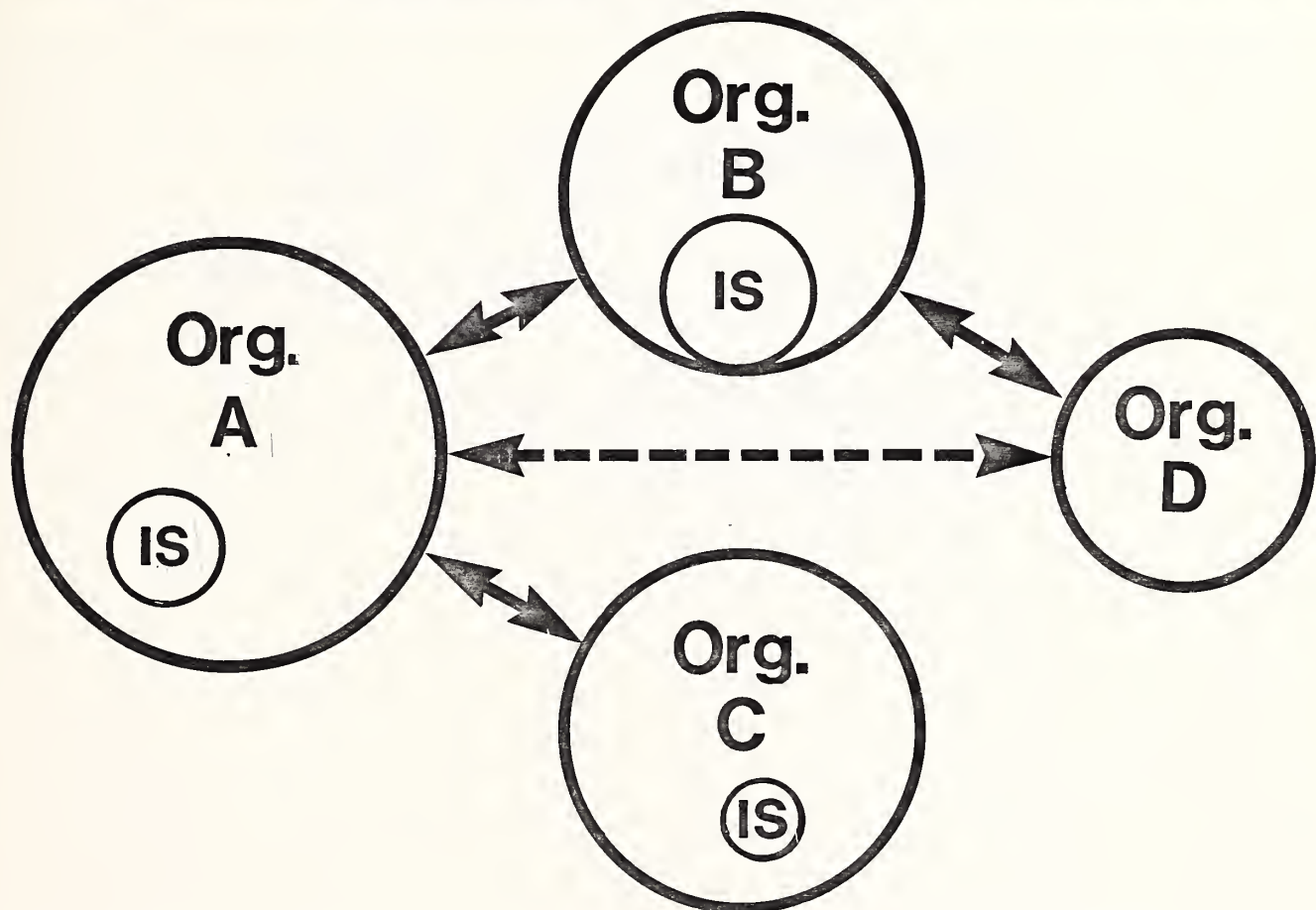
HOW WILL INFORMATION X CHANGE YOUR ORGANIZATION?

- **I.S.**
 - **Corporation**
 - **“Relatives”**
-

CORPORATE ORGANIZATION

- **IT and IS Will Change the Organization**
 - **How will it Operate?**
 - **People**
 - **How Many?**
 - **When?**
 - **What Skills?**
-

CHANGING ORGANIZATION INTERFACES



PEOPLE ISSUES

- **Health**
 - **Women in Work Force**
 - **Legislation and Regulation**
-

INPUT®

V.P. HUMATICS

I.S. ISSUES

- **Reporting Structure**
 - **Scope of Responsibility**
 - **Budgetary Authority**
 - **Senior Management People Expectations**
-

STATURE OF I.S.

- **“Us” and “Them”**
- **“Not on My Watch” Syndrome**

**I.S. EXECUTIVE
AS COMPANY PRESIDENT
- NOT TECHNICIAN**

COMMUNICATIONS

- **Executives**
 - **Customers (Users)**
 - **Staff**
-

I.S. RESPONSIBILITIES

- **Competitive Positioning**
 - **Innovation**
-

INTERNAL I.S. CONSIDERATIONS

- **Who Owns the Data?**
 - **Who Gets Benefit from its Use?**
 - **Is Information an “Asset”? Or is it Free?**
-

INPUT®

ISSUES

ORGANIZATION OF I.S.

- **Distribution?**
- **Control?**

DEVELOPMENT

- **Where Performed?**
 - **By Whom?**
-

TELECOMMUNICATIONS

- **Responsibility?**
 - **Integration?**
-

**OFFICE SYSTEMS
NOT
OFFICE AUTOMATION**

**MAKE
VS.
BUY**

OTHER ISSUES

- **Education and Training**
 - **Standards and Policies**
-

- **IS Can't Work in a Vacuum**
 - **Only by Working with Users
are Benefits Obtained**
-

TIMING OF RESULTS

- **Don't Oversell**
 - **Consider Inertia**
 - **Impact of Change**
-

JOINT ACTIONS I.S. AND USERS

- **Exploration**
 - **Information Flow**
 - **Planning**
 - **Implementation/Integration**
 - **Measurement and Control**
-

**PETER A. CUNNINGHAM, PRESIDENT
INPUT**

Peter A. Cunningham is founder and President of INPUT. Mr. Cunningham is a leading expert in the computer and communications industries.

Before starting INPUT, in 1974, he spent ten years in management and computer consulting in the United States and Europe. During this time, he was President and co-founder of J.W. Goodhew & Associates, Inc., a Washington, D.C. based software services company. He also held consulting and management positions with Management Science America and C-E-I-R. He earned his B.Sc. (Physics), A.R.C.S., from Imperial College, London, and has a M.P.A. in Technology of Management from the American University in Washington, D.C.

INPUT®

SYSTEMS AND SOFTWARE INDUSTRY CHALLENGES

Robert F. Berland
Director, Strategic Planning
IBM Information Services

APPLICATION DEVELOPMENT AND END-USER TRENDS AND DIRECTIONS FOR THE 1980s

Robert F. Berland, Director of Strategic Planning from IBM Information Services, will give a presentation on Application Development and End-User Trends and Directions for the 1980s. This presentation will include discussions of the customer environment and their information processing organization, and requirements and trends in each of the following areas:

- Application Development
- End-User Information Center
- Distributed Data Processing
- Data Base Management
- Office Systems

The presentation will include productivity and end-user interface considerations. The focus will be on software from the PC/Intelligent Workstation through medium and large systems. It will also include customer considerations for taking advantage of the trends of the 1980s.

R.F. BERLAND
DIRECTOR, STRATEGIC PLANNING
IBM INFORMATION SERVICES

Bob joined IBM in 1968 and since then has held several positions ranging from CICS Field System Center Representative to Data Systems Project Manager in Santa Teresa. He was the Director, IPS Programming Product Line from 1982 where he was responsible for the IBM Applications Software Business Area Strategy for application development, end-user interactive, industry applications and cross-industry applications. Bob has recently been promoted to IIS Director of Strategic Planning where his new responsibilities will be to develop the cross-IIS Strategy for applications software, networking and consulting services.

INPUT®

DIRECTIONS 1989
COMPUTER INDUSTRY IN TRANSITION

Ronald Weeks
Senior Product Manager
Architecture and Business Planning
Cincom Systems, Inc.

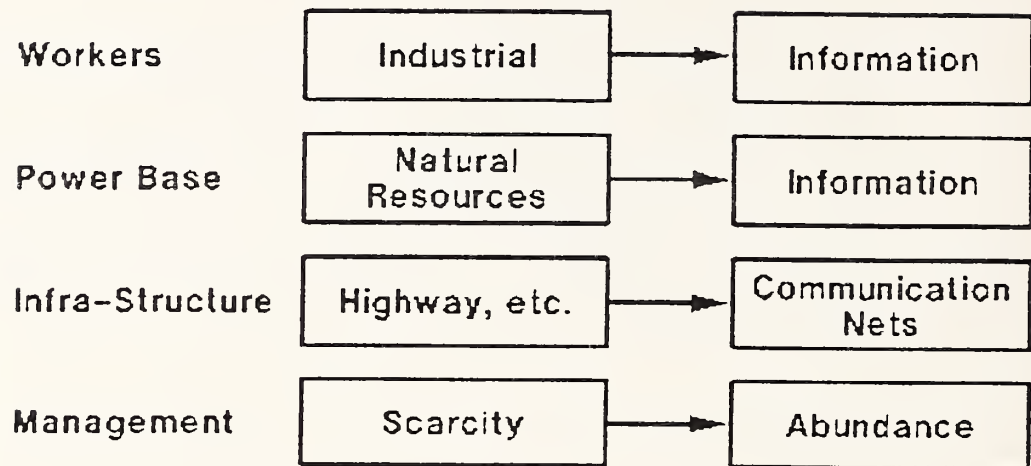
Industry At A Crossroads

"The industry is no longer the private domain of the handful of companies that found it. A new breed; better suited . . . is taking over. Confusion reigns . . . Things will never be the same again."

Source: "The Coming Computer Industry Shakeout", S. McClellan

Notes:

World Wide Information Based Society



Source: Megatrends, J. Naisbitt

Notes:

Basic Problem

"The problem with MIS is not seeing itself as managing something that can be a strategic weapon."

Source: Strategic Planning, Gillenson & Goldberg

Notes:

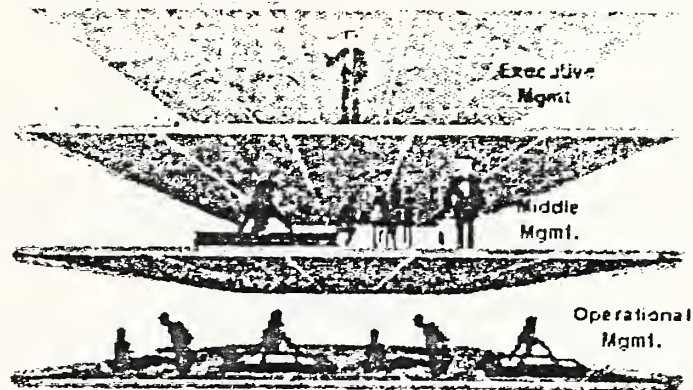
Strategic Issues in Information Planning

- MIS supported business objectives
- Using information for competitive advantage
- Integrating technologies through common data
- Ensuring user services and satisfaction
- Improving resource deployment

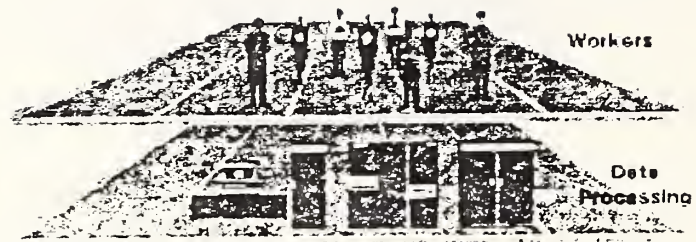
Source: Strategic Planning, Gillenson & Goldberg

Notes:

Current Management Hierarchy



Notes:

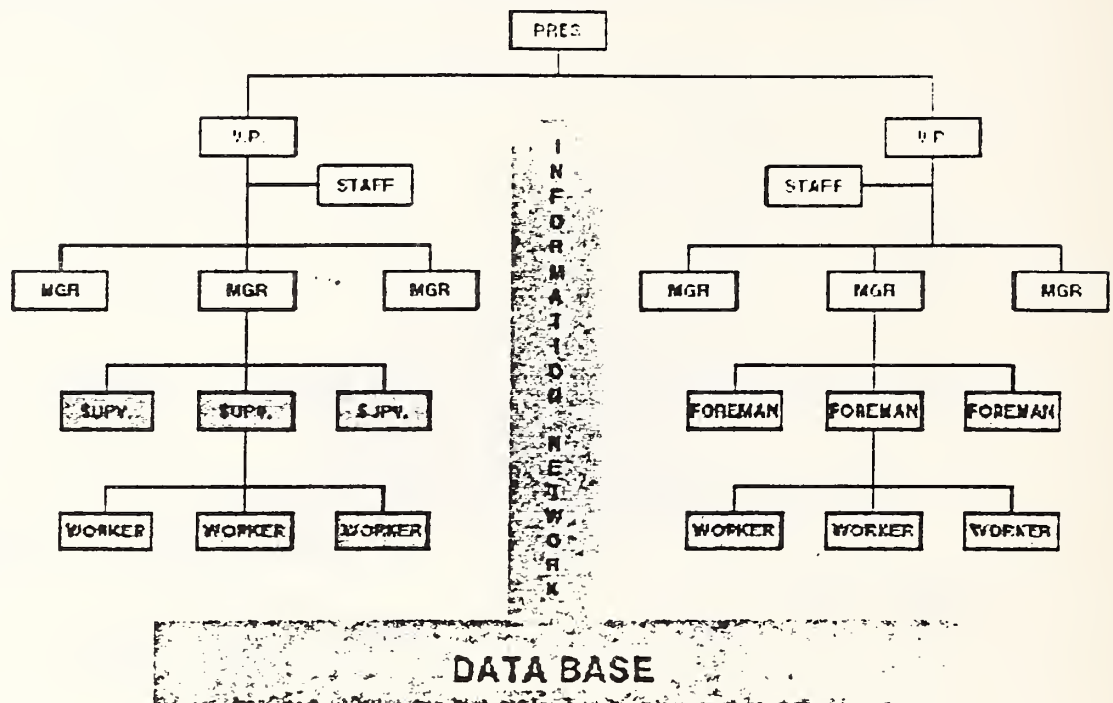


Notes:

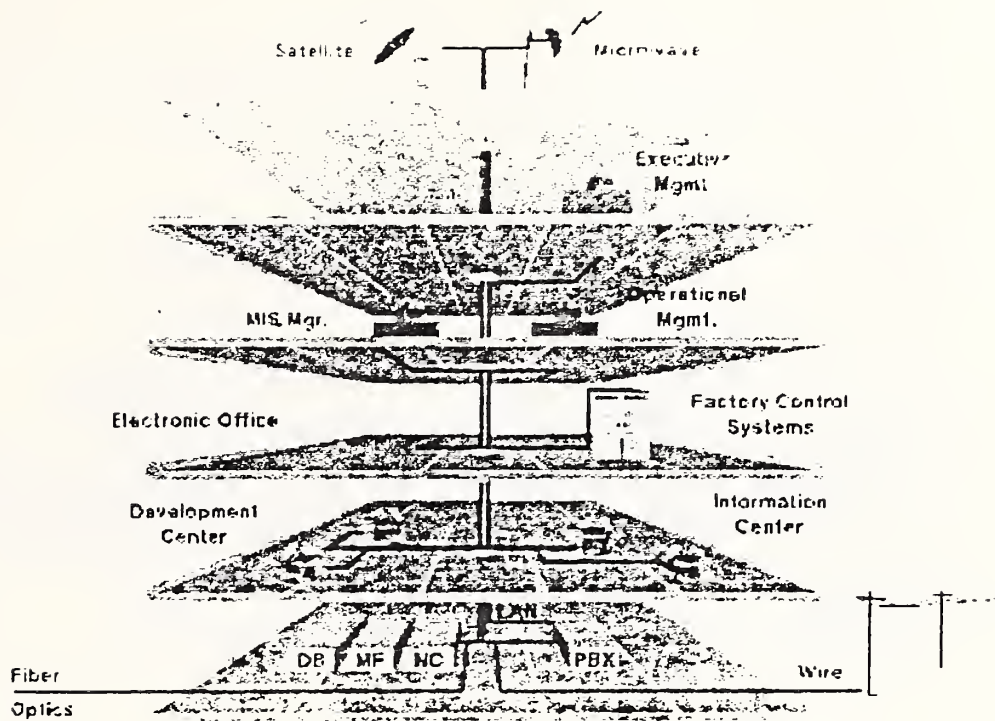
[illegible]

Notes:

Better Communication Tools



Notes:



Notes:

Use Software to Exploit the Technology

Notes:

New Initiatives to Advance Technology

Japan: 5th generation project:
\$450 million - \$1 billion over 10 years

France: Ministry of Research and Technology
\$1 billion over 10 years (proposed)

UK: Advanced information technology
\$567 million over 5 years (proposed)

Notes:

New Initiatives to Advance Technology

USA:

MCC

Microelectronics and Computer Technology Corporation \$420 million over 10 years

SRC

Semiconductor Research Co-operative vendor and university research: no set budget

US Gov.

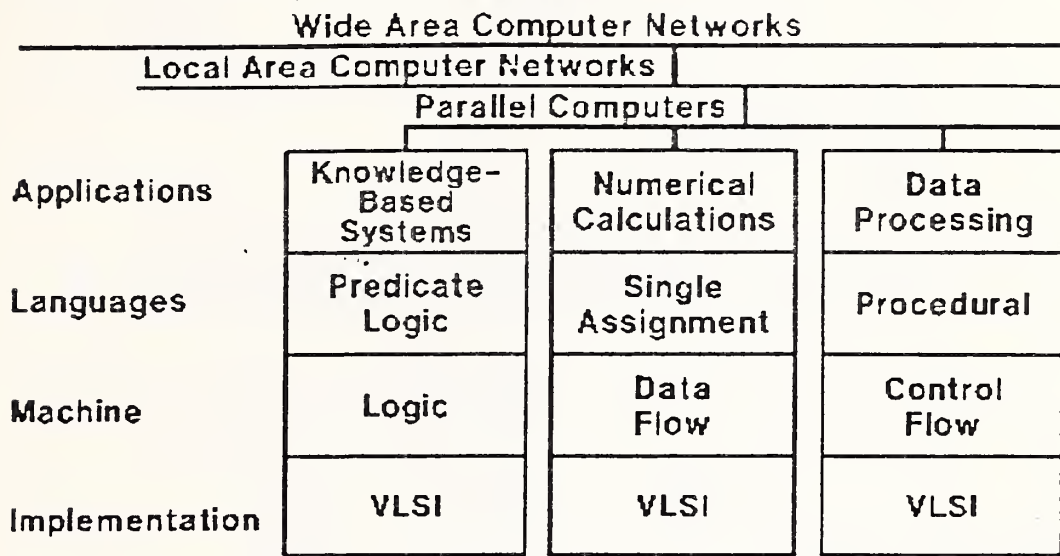
**DARPA, DOD, DOE, NSF
\$500 million to \$1 billion over 10 years**

CINCOM

**Research and development budget
\$250 million over next 5 years**

Notes:

Machine Architectures



5th-Generation

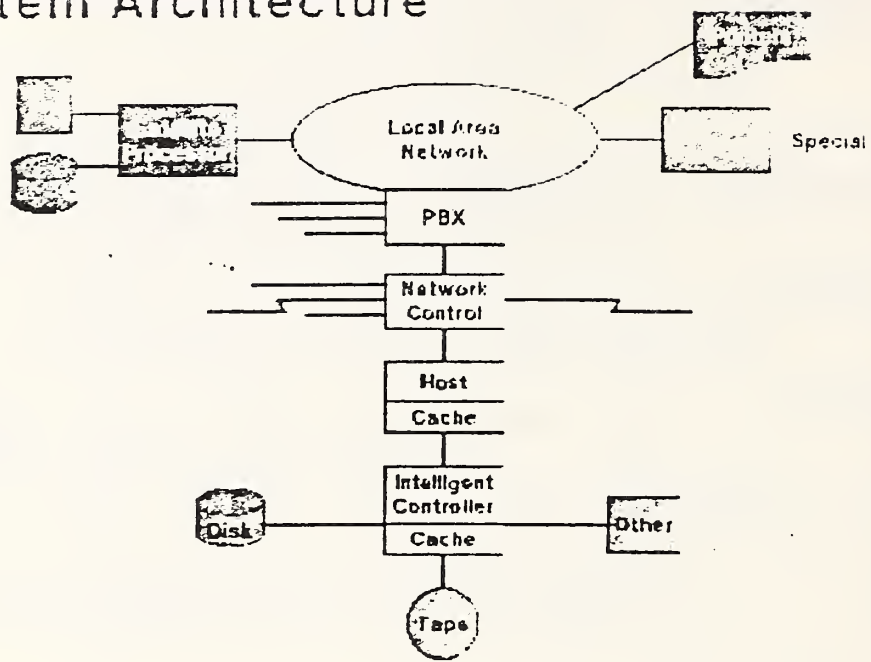
Supercomputer

von Neumann

Source: Computer Design

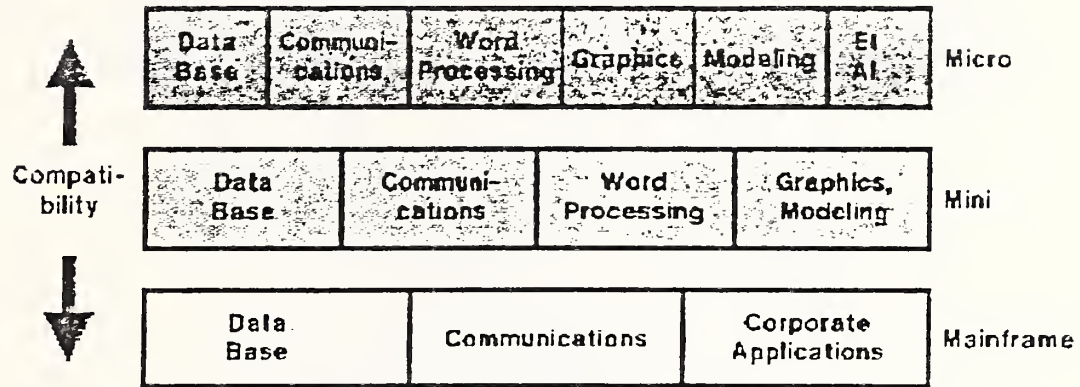
Notes:

System Architecture



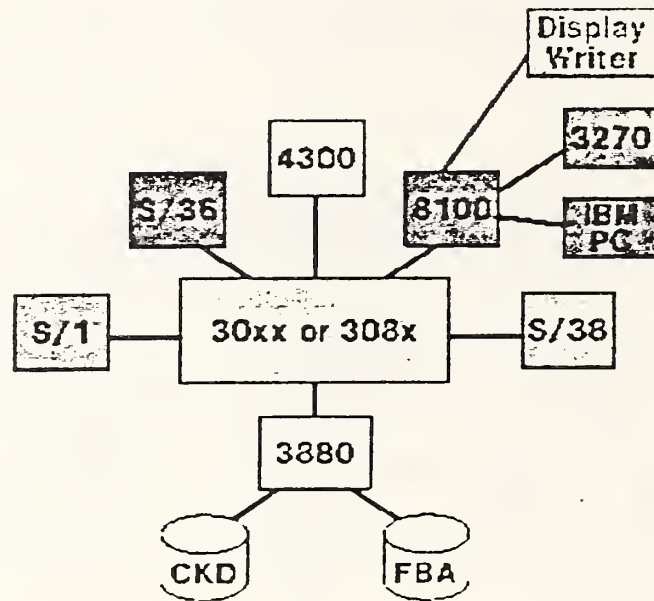
Notes:

Synergy Between Processors



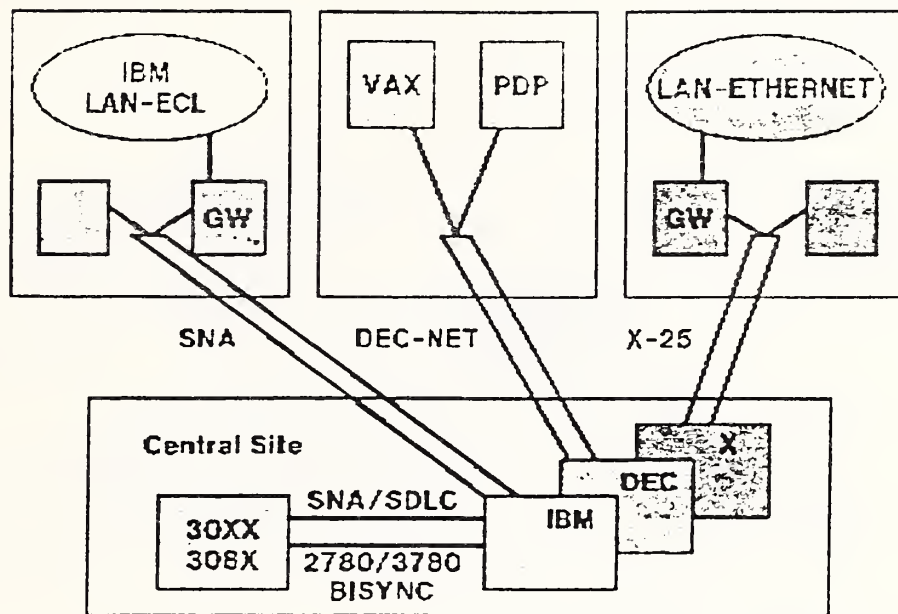
Notes:

IBM Processor Strategy



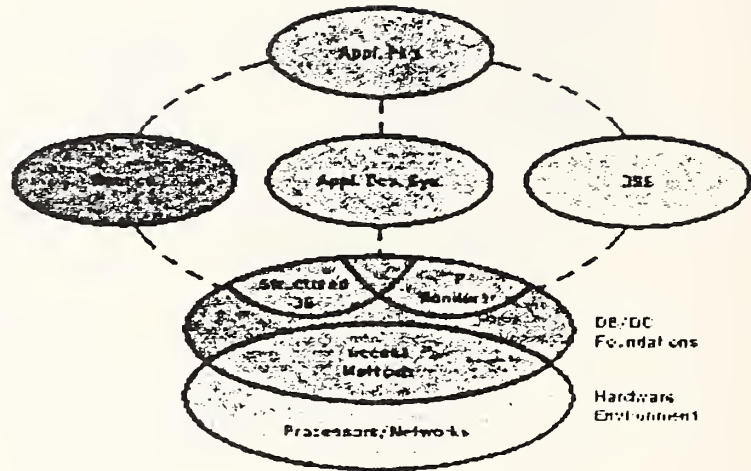
Notes:

Multiple Network Protocols

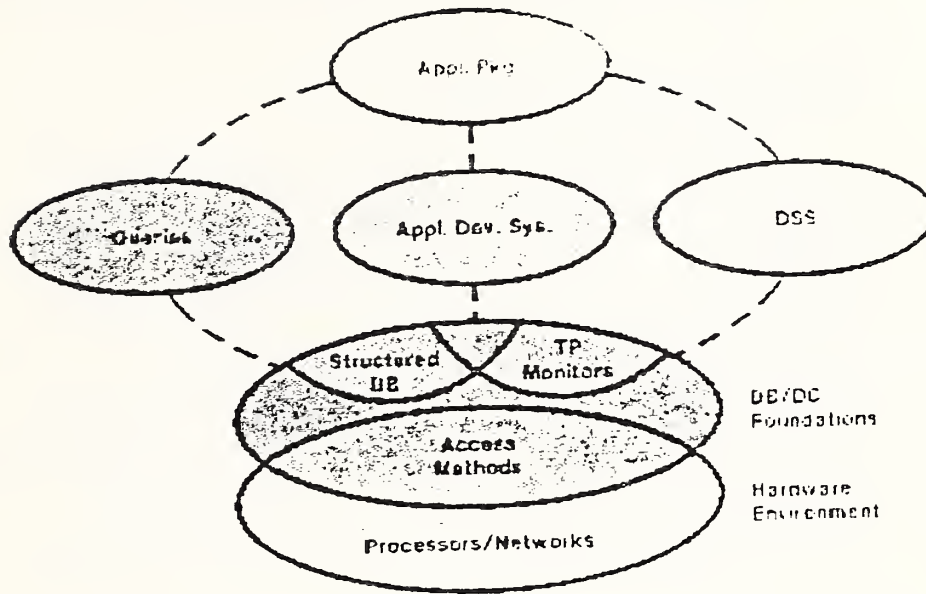


Notes:

New Demands of End User Computing



Notes:



Notes:

Management Issues

Development Center	Information Center
<ul style="list-style-type: none">• Batch• COBOL• Compiled• Procedural• Mainframe• Corporate Data• Transaction Systems	<ul style="list-style-type: none">• On-line• 4th Generation• Interpretive• Non-Procedural• Personal Work Station• Personal Data• Expert Systems

Notes:

Study of End-User Computing

- Why PC's?
- How are they used?
- Who builds applications?
- Who uses applications?
- Where are sources of data?

Notes:

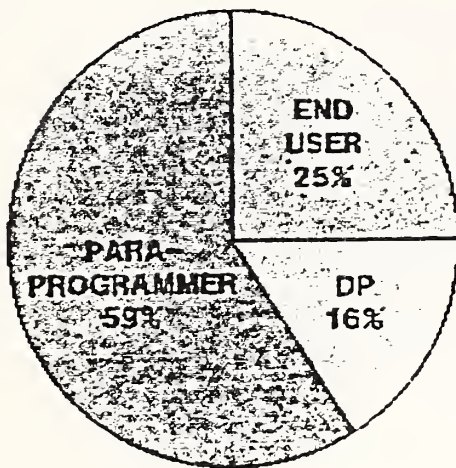
Reasons for Personal Computers

- Software only on PC
- Cost is less
- PC is readily available
- Feeling of user control
- Fast/easy development
- Assured access
- Frustrated with MIS
- Response time
- Told by boss
- Security

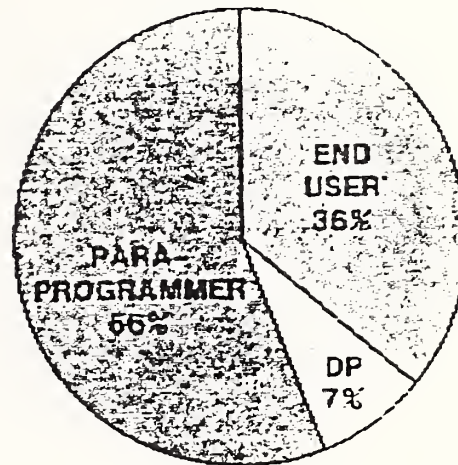
Notes:

Who Writes Applications?

Timesharing

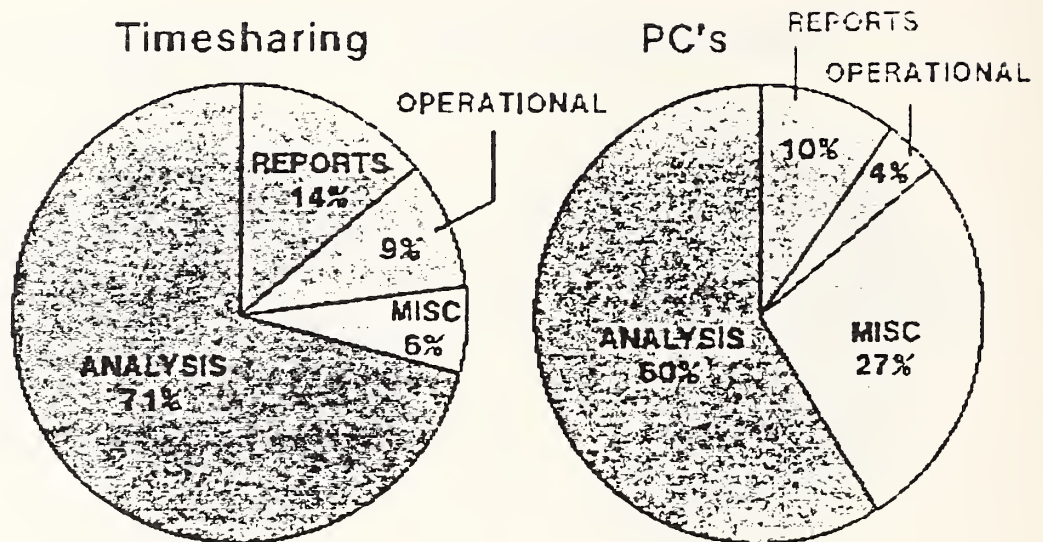


PC's



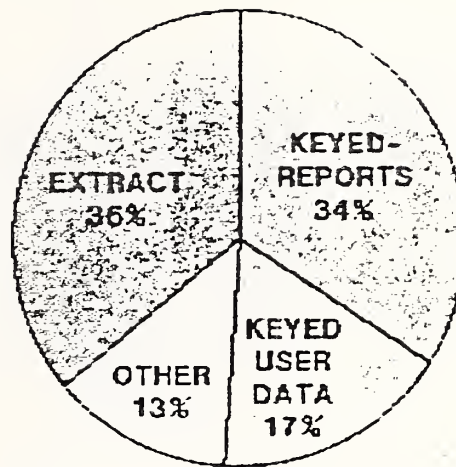
Notes:

What Applications?



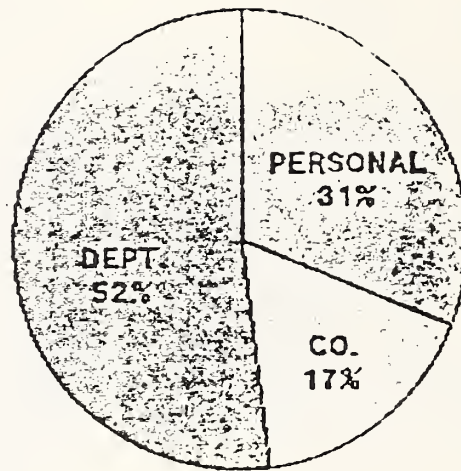
Notes:

Sources of Data



Notes:

System Scope



Notes:

MIS Support for Strategic Plan

- Integrate a wide range of products
- Provide effective data migration procedures
- Distribute to the local level
- Provide education for all levels

Notes:

Recommendations

- A shared DP environment
- Effective controls
- MIS support of strategic plan

Notes:

Forms of Integration

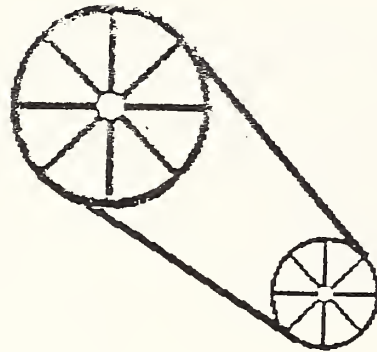
- Data
- Applications
- User interface

All achieved through
software integration

Notes:

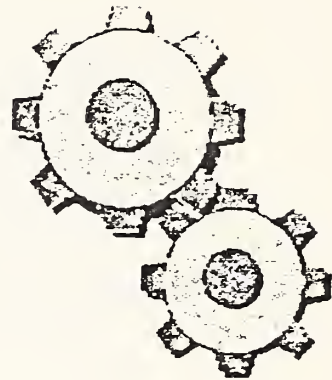
Degrees of Integration

Interfaced



Belts

Integrated

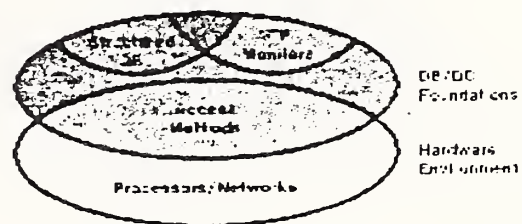
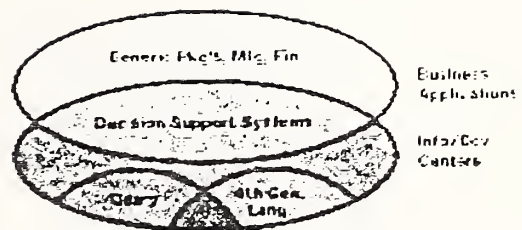


Gears

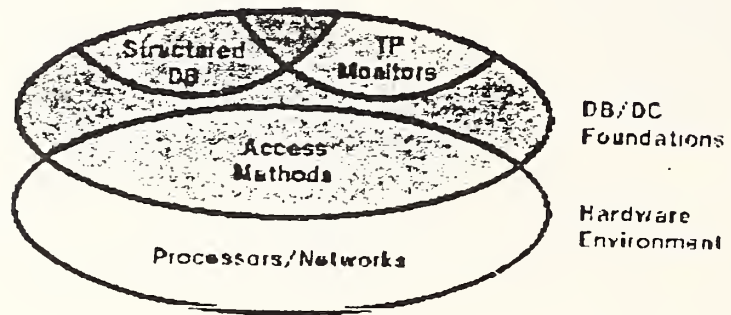
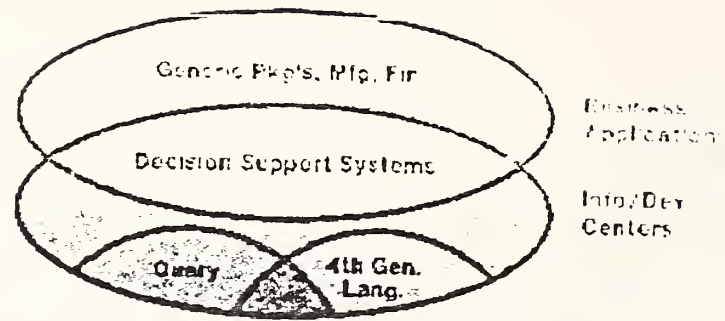
Efficient, Reliable, Powerful

Notes:

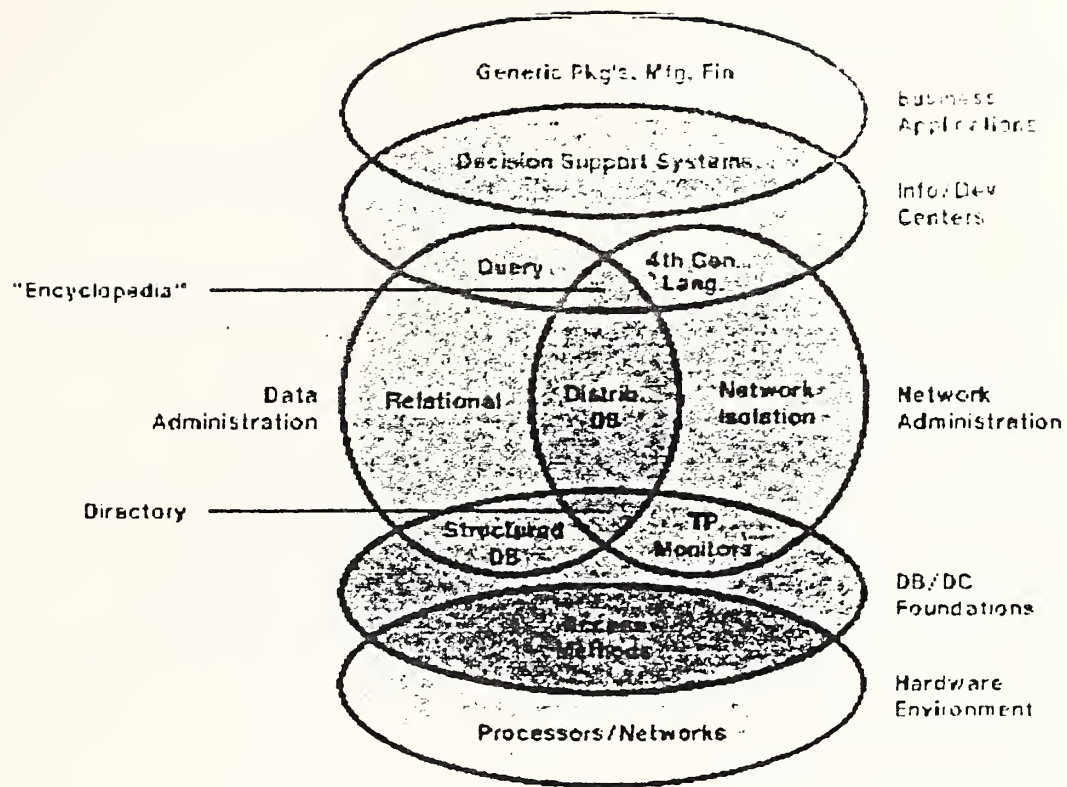
Evolving Software Architecture



Notes:

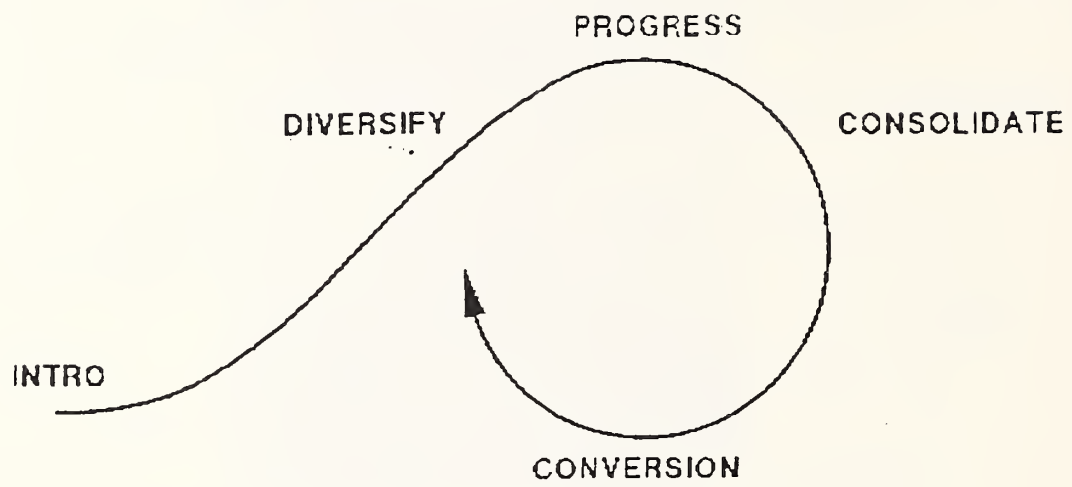


Notes:



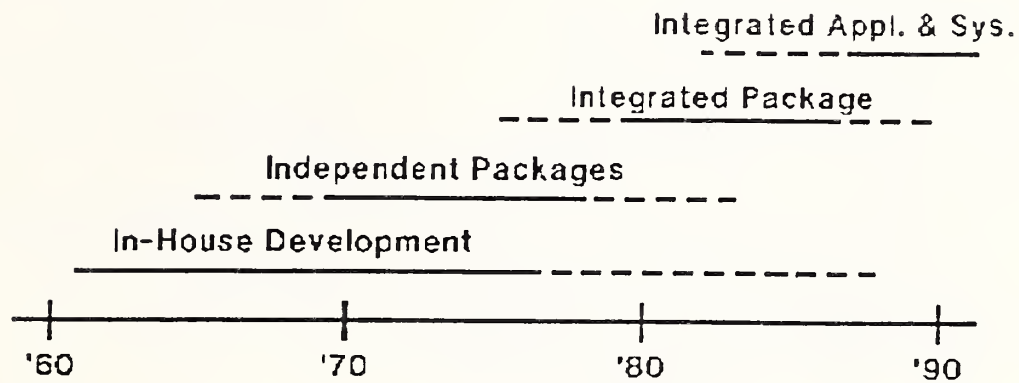
Notes:

Technology Cycle



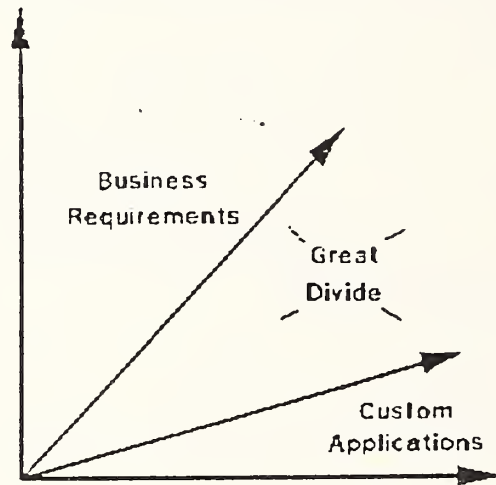
Notes:

Stages of Application Software



Notes:

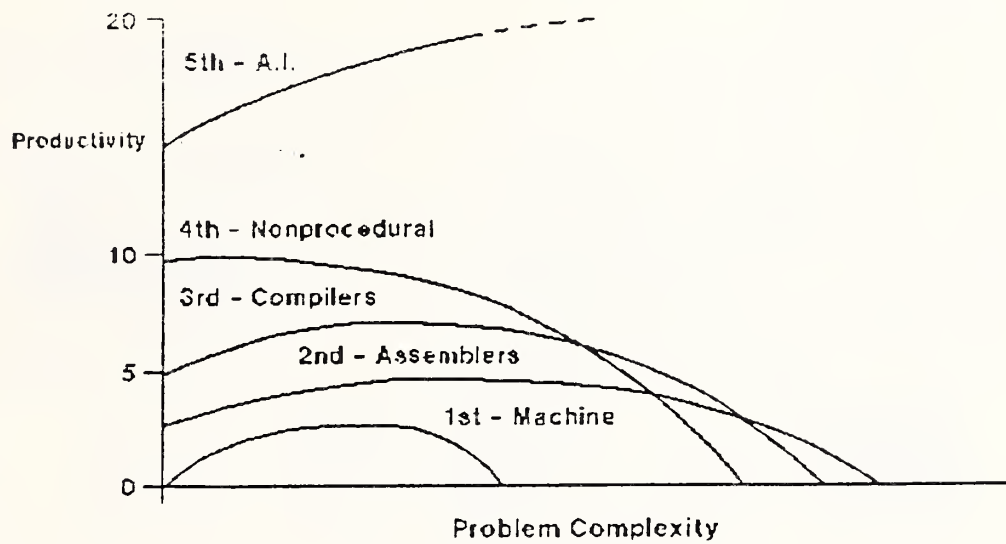
Custom Applications Lag Business Requirements



- Business not static
- Business requirements drive change
- Applications model business
- Lag in applications causes inefficient operation

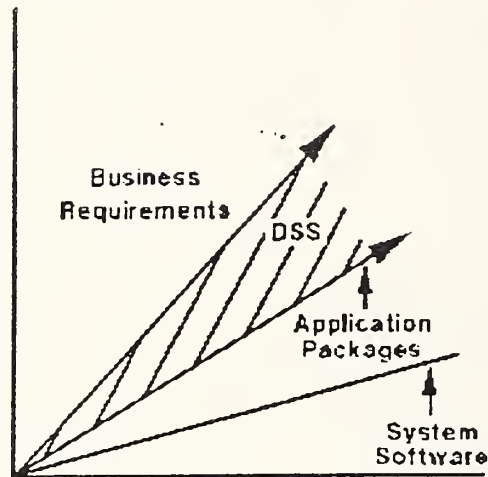
Notes:

Language Generations



Notes:

Three Part Solution

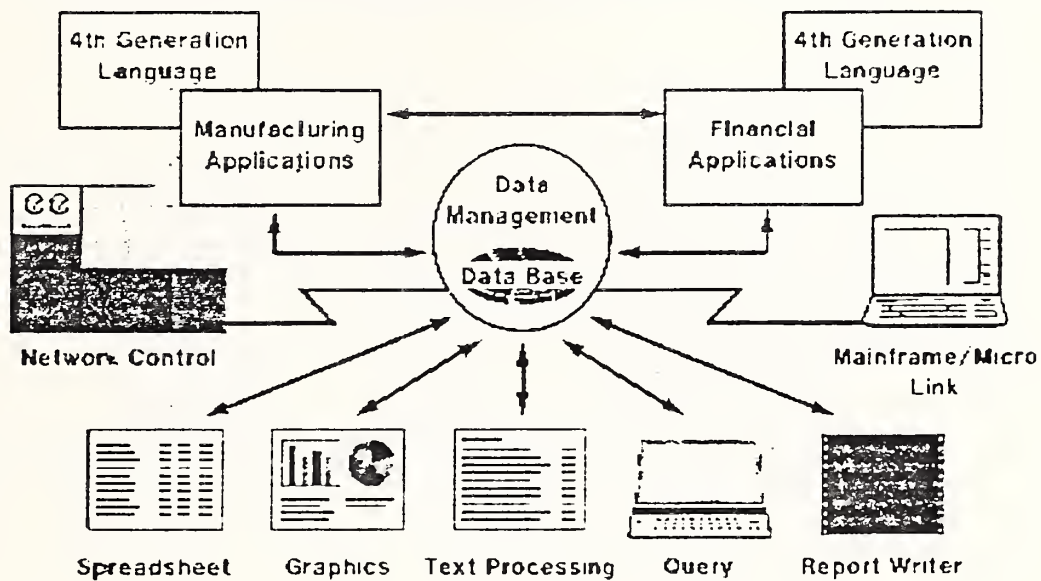


1. System Software:
Data/Network Mgt.
2. Application Packages:
Predictable
3. Decision Support
Systems:
Unpredictable

Notes:

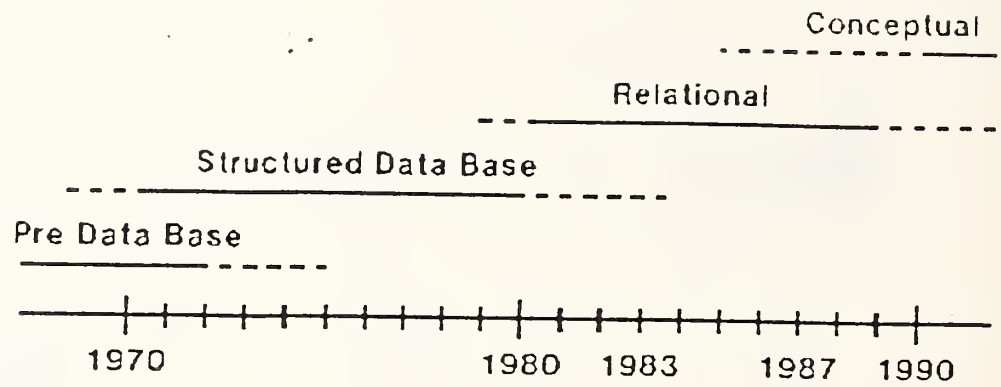
Cincom Business CONTROL Systems

Complete Integrated Information Systems



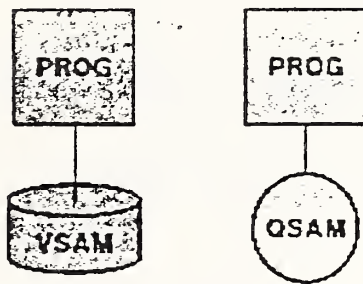
Notes:

Data Base Time Line



Notes:

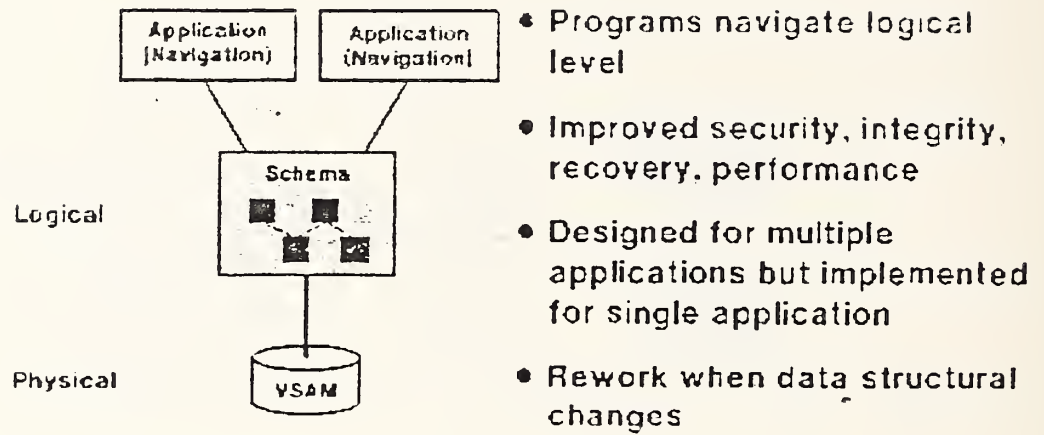
Pre-Database ERA



- File belonged to program
- Program dependent on physical location, format, access method
- Redundant copies
- Constant rework

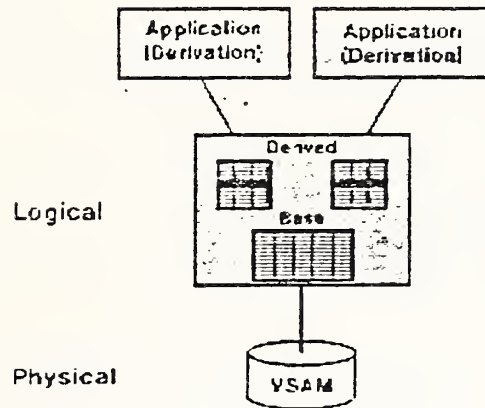
Notes:

Structured Database Systems



Notes:

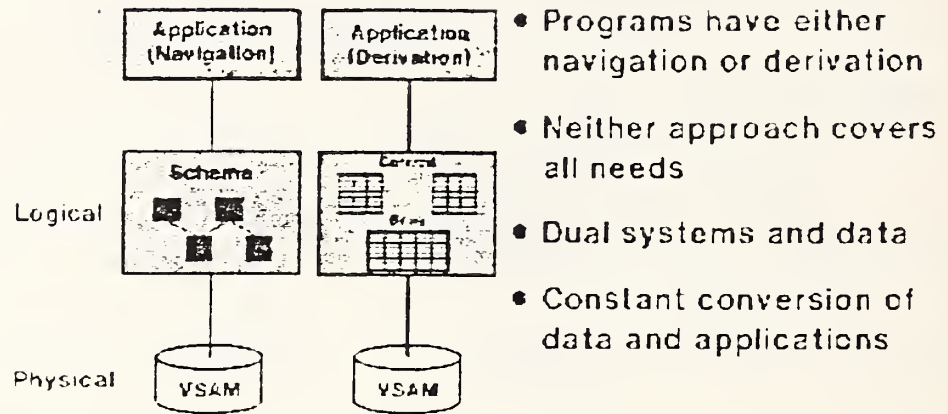
Relational DBMS



- Programs derive data from base tables
- Improved ease of use and data retrieval
- Adverse impact on performance and integrity
- Rework when base tables changed

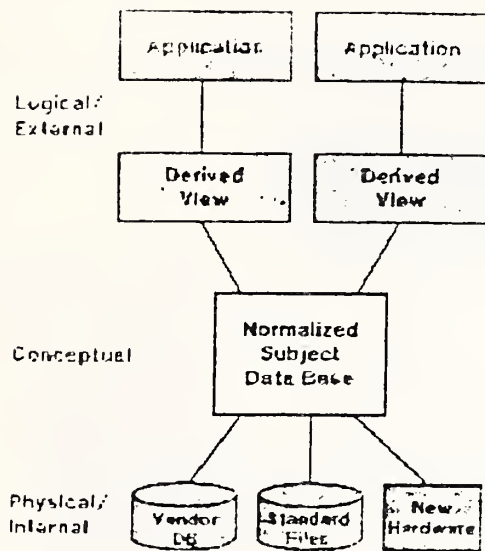
Notes:

Current Dilemma



Notes:

Three Level Architecture

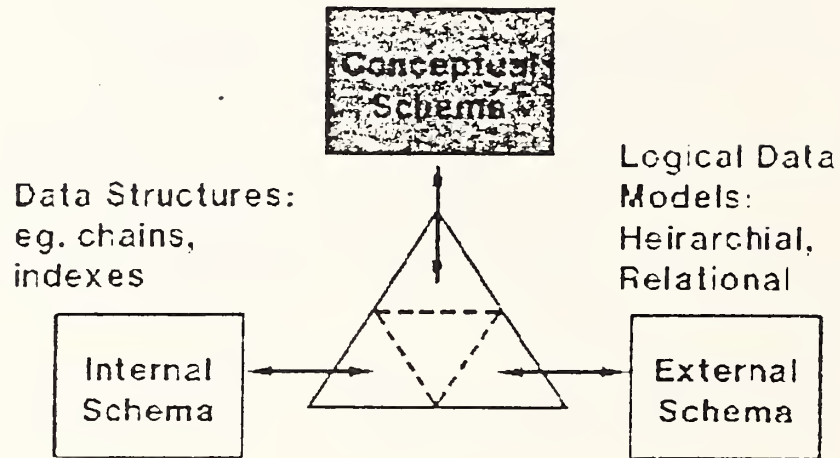


- No navigation or derivation logic in program
- Conceptual level is company perspective; logical is application perspective
- Supports existing data structures and migration to new technology
- Requires a directory for control and data definition

Notes:

Three Level Directory

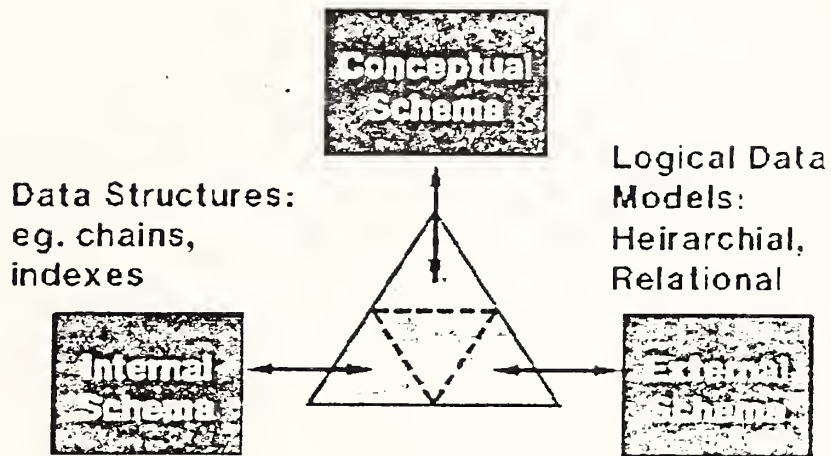
Semantic Data Models:
eg. Entity/Relationship



Notes:

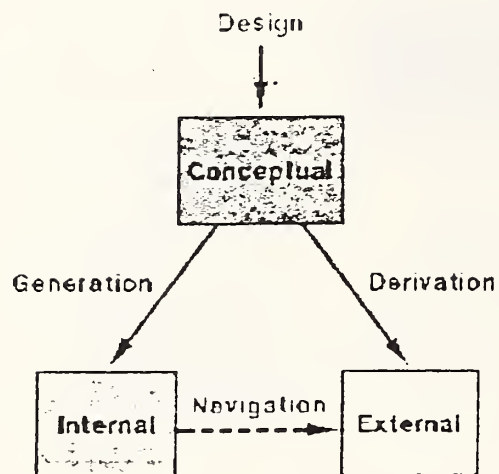
Three Level Directory

Semantic Data Models:
eg. Entity/Relationship



Notes:

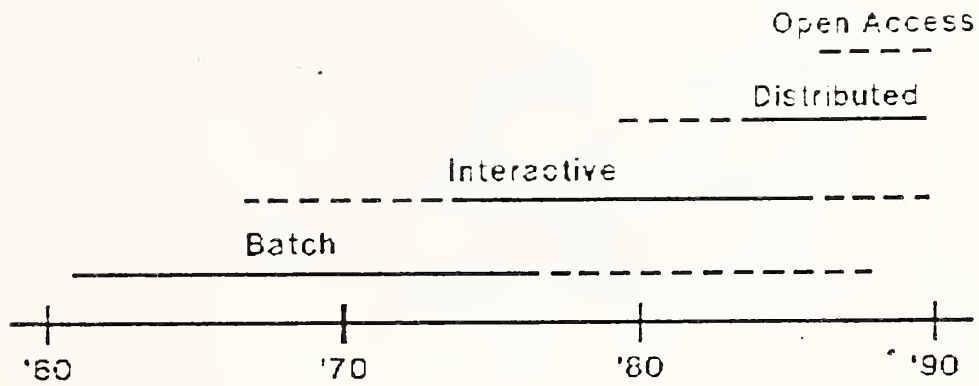
Three Level Directory



- Design by DBA
- Derivation by analyst/programmer/end-user
- Generation by system
- Navigation by system

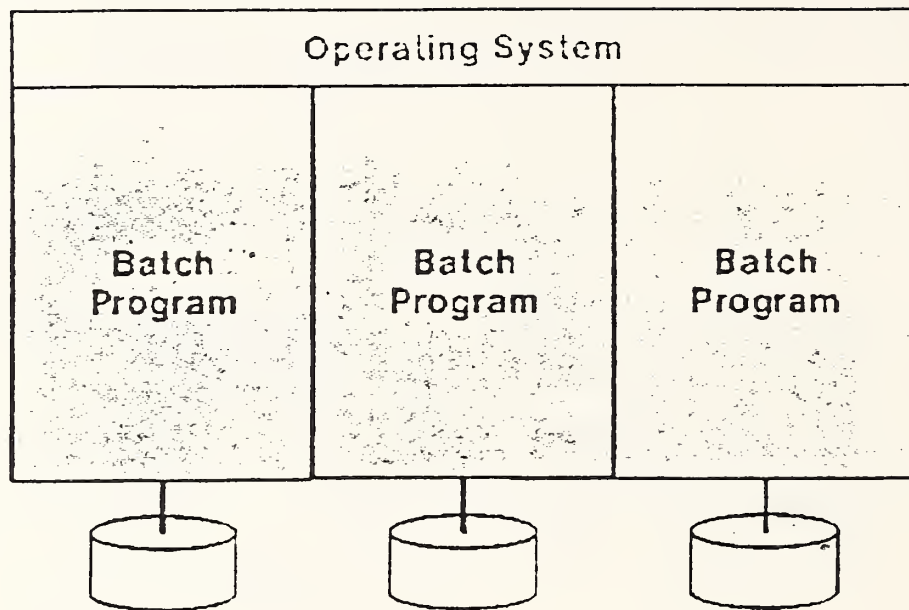
Notes:

Stages of On-Line Development



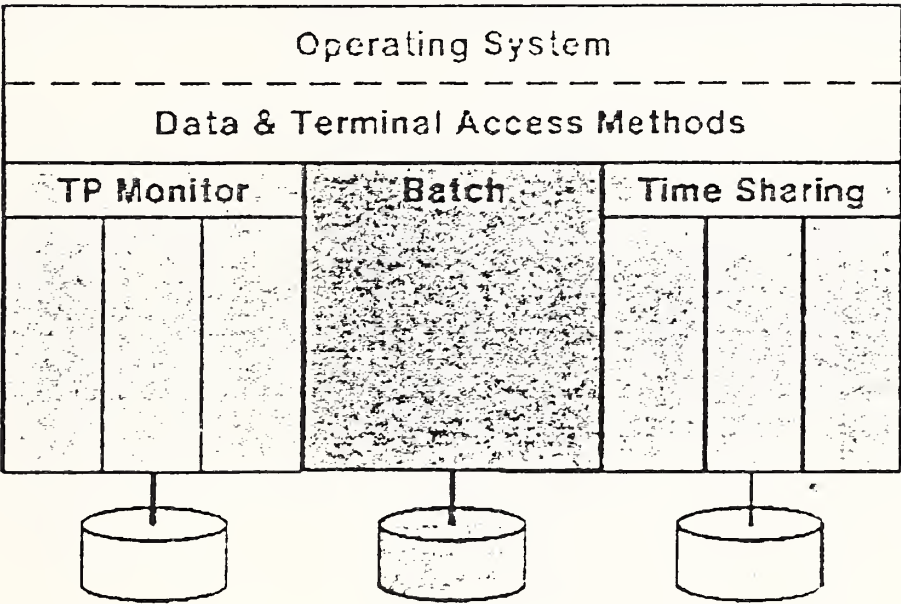
Notes:

Batch Environment



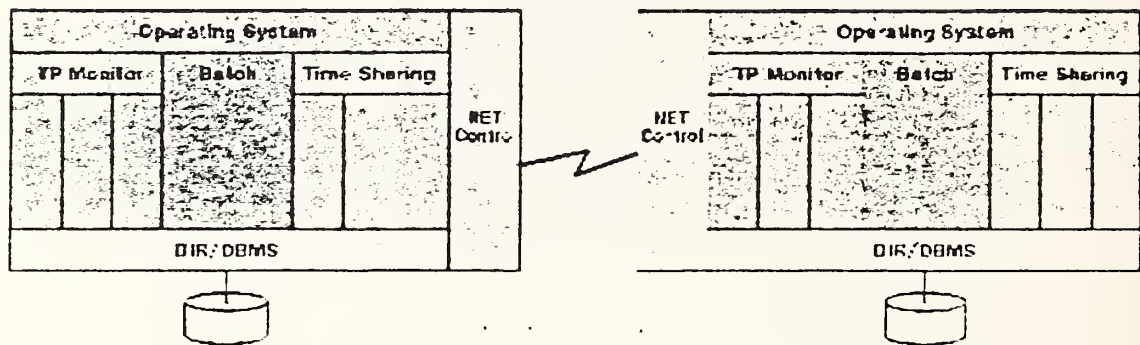
Notes:

Interactive Environment



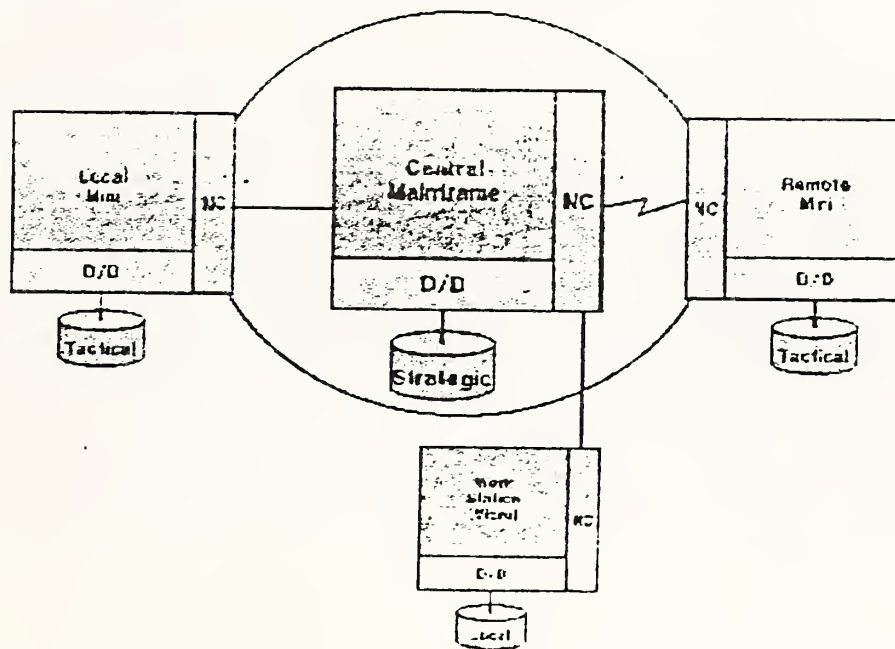
Notes:

Distributed Environment



Notes:

Open Access Environment



Notes:

Standard Layered Architectures

ISO/OSI		IBM/SNA				
Application Layer	Software	Application Programs				
Presentation Layer		JES	TSD	CICS	IMS	...
Session Layer Administration/Dialogue	Firmware	VTAM or TCAM				
Transport Layer		NCP/VS				
Network Layer	Hardware	S/370 Channel	S/370 Channel	SDLC		
Data Link Layer		S/370 Channel	3705 Channel Adapter	Comm Lines		
Physical Layer						

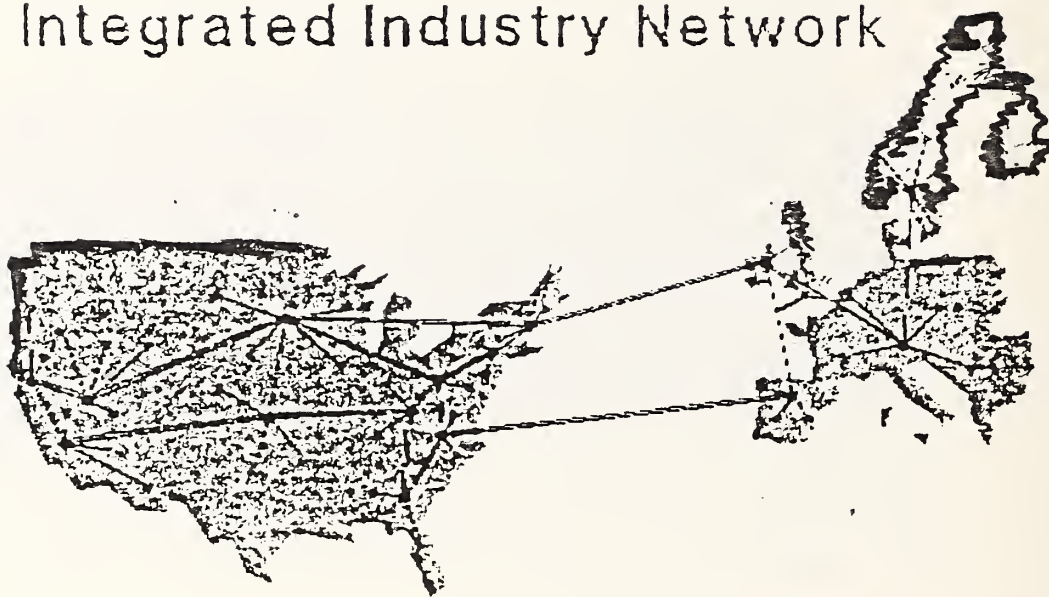
Notes:

Future Layered Architectures

Text Applications	Application Packages		5th Generation Systems	
	Query	4th Generation Languages		
DCA	Dictionary/Directory			
DIA	Relational Data Base	Network Control		
Access Method/Firmware				
Physical/Hardware				

Notes:

Integrated Industry Network



Notes:

— RONALD WEEKS

SENIOR PRODUCT MANAGER, PRODUCT ARCHITECTURE
AND BUSINESS PLANNING
CINCOM SYSTEMS, INC.

Mr. Weeks currently holds the position of Senior Product Manager, Product Architecture and Business Planning for Cincom Systems, Inc. In this role, it is his responsibility to establish those strategic areas that Cincom should address for product planning and development.

Mr. Weeks has over 20 years in the computer industry, 15 of which have been with Cincom. During this period he has performed a variety of functions in the areas of product planning, product development, technical support and market planning. Mr. Weeks has a B.S. in Math from the University of Cincinnati, and an M.B.A. in Marketing from Xavier University.

**MERGERS, ACQUISITIONS
AND STRATEGIC PARTNERING:
NOT AN OPTION**

**Edward I. Metz
Partner
Broadview Associates**

NEW YORK TIMES (6/30/85)

- **AT&T's Allies**
 - **Quotron Financial Services**
 - **Time, Chemical Videotex
Bank, Bank of America**
 - **EDS Systems**
 - **Philips Telecom Equip.**
 - **Olivetti, CT PC**
-

NEW YORK TIMES (6/30/85)**IBM's ALLIES**

- | | |
|--------------------------|-----------------------------------|
| - Merrill Lynch | Financial Services |
| - CBS & Sears | Videotex |
| - MCI | Long-Distance
Services |
| - ROLM | Telecom Equipment |
| - Intel | Semiconductors |
-

ELECTRONIC NEWS (7/15/85)

- **GE Info Unit to Sell Moneynet**
 - **GEISCO/NCI to MTECH**
 - **HP to Unveil CAE/CAD Workstations**
 - **Linked to 11% Interest in Cerikor Software**
-

ELECTRONIC NEWS (7/15/85)

- **Bell Atlantic Sets \$100M Fund**
 - **For Forsythe/McArthur Associates, Third-Party Lessor of IBM Equipment**

ELECTRONIC NEWS (7/15/85)

- **Symbolics Enters Japan
AI Venture**
 - **With Nichimen Co. &
Toyo Information Systems**
 - **Visual Tech Sells All Rights
to Xenix-Like CPU to Lee**
-

ELECTRONIC NEWS (7/15/85)

- **BCS to Establish Joint Venture in China**
 - **Business Computer Solutions (Miami) with Academy of Sciences (PRC)**
-

MIS WEEK (7/17/85)

- **Dow Jones to Buy into Telerate**
 - **Joined with Oklahoma Publishing to Buy 52% from Exco**

ELECTRONIC NEWS (7/15/85)

- **Merger Value Increases 119% during First Half to \$7.94 Billion**

- GM	- Hughes	\$5 Billion
- IBM	- MCI (16%)	\$1 Billion
- MCI	- SBS	\$465 Million
- PACTEL	- CI	\$431 Million

ELECTRONIC NEWS (7/15/85)

- **Merger Value Increases 119% during First Half to \$7.94 Billion**

- British	- Mitel (51%)	\$217 Million
- Kodak	- Verbatim	\$175 Million
- Siemens	- Telecom Plus	\$145 Million

SMALL COMPANY STRATEGY

- **Five Years Ago**
 - **The Idea and the Business Plan**
 - **Venture Capital Financing**
 - **Two More Venture Rounds**
 - **Initial Public Offering**
 - **Process of Maturity**
-

SMALL COMPANY STRATEGY

- **Today**

- **The Idea and the Business Plan**
 - **Venture Capital Financing**
 - **Two More Venture Rounds**
 - **What Do You Mean, the Price Went Down?**
 - **Process of Maturity**
 - **We Need Help to Penetrate the Markets**
-

WHAT CHANGED?

- **Entrepreneur's Perspective**
 - **Venture Capital Community Is Resisting Funding at a Fair Price**
 - **The Quickest Way to Market May Be through the Back Door of an Established Company**

. . . Per

WHAT CHANGED?

- **Venture Capital**
 - **Still Significant Force but,
Digestion Problems**

WHAT CHANGED?

- **IPO**

- **1983 . . . 884 Deals, \$12.6 Billion**
 - **1984 . . . 548 Deals, \$3.8 Billion**
 - **1983 . . . PE - 24.7**
 - **1984 . . . PE - 16.2**
 - **12/83 . . . 109 Deals**
 - **12/84 . . . 31 Deals**
-

INFOTRENDS DRIVE ACQUISITION STRATEGY

CONTENT

- Hardware and Telecommunications Firms Seeking Software, Data Bases and Specialized Human Resources

INTEROPERABILITY

- Hardware and Telecommunications Firms Seeking Compatible, Complementary Partners

DISINTERMEDIATION

- All Types of I² Firms Seeking Vertical Capabilities and Powerful Non-I² Affiliates

GLOBALIZATION

- Exploitation of U.S. Market Positions or Product Technologies by Larger Japanese and European Firms

CONVERGENCE

- Diversification Into New I² Clusters by Players In Other I² and Non-I² Businesses

SIX INTERRELATED INFORMATION INDUSTRY CLUSTERS

Services

- **Entertainment**
 - Software production
 - Electronic distribution
- **Information**
 - Software
 - Publishing/Printing
 - Processing
 - Advertising
- **Communications**
 - Basic transport
 - Value added

Products

- **Consumer Electronics**
 - Audio/Video
 - Computer/Communications
- **Office Equipment**
 - Stand alone
 - Integrated systems
- **Business Operations Equipment**
 - Generic Processing
 - Industry-specific

INFORMATION INDUSTRY (I²) STRUCTURE

		U.S. 1990 (BILLIONS)	% OF TOTAL
SERVICES	ENTERTAINMENT	\$ 99	(10%)
	INFORMATION	226	(23)
	COMMUNICATIONS	162	(17)
\$487 (50%)			
PRODUCTS	CONSUMER ELECTRONICS	57	(6)
	OFFICE EQUIPMENT	104	(11)
	BUSINESS OPERATIONS EQUIPMENT	322	(33)
		<u>\$ 970</u>	<u>(100%)</u>
\$483 (50%)			

Source: Booz-Allen & Hamilton Inc.

INFORMATION INDUSTRY (I²) SERVICES STRUCTURE

			U.S. 1990 (BILLIONS)	% OF TOTAL
		PRERECORDED SOFTWARE	\$ 22	(2%)
	ENTERTAINMENT	BROADCASTING & CABLE	60	(6)
	\$99 (10%)	OTHER DISTRIBUTION	17	(2)
		COMPUTER SERVICES/ SOFTWARE	78	(8)
\$487 (50%)	INFORMATION	PUBLISHING	92	(9)
	\$226 (23%)	PRINTING & ADVERTISING	56	(6)
		LOCAL TELECOMM.	45	(5)
	COMMUNICATIONS	LD TELECOMM.	71	(7)
	\$162 (17%)	POSTAL & DELIVERY	46	(5)

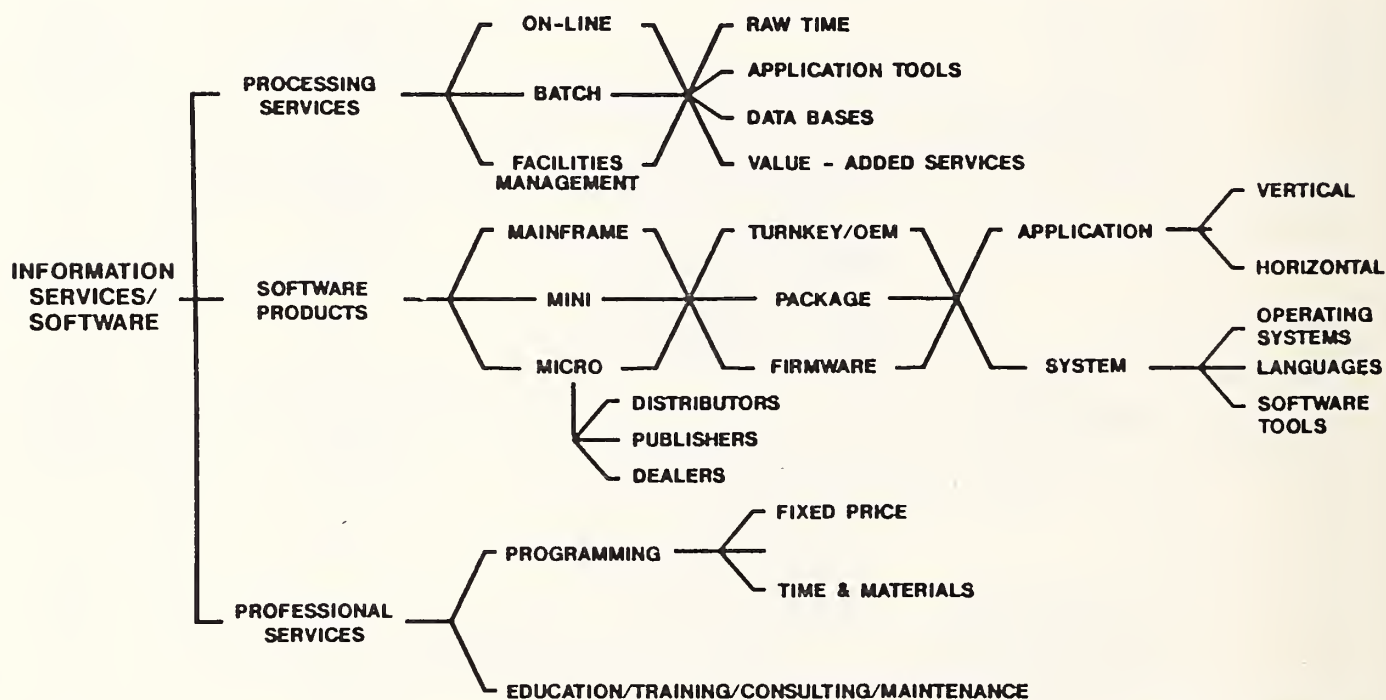
Source: Booz·Allen & Hamilton Inc.

INFORMATION INDUSTRY (I²) PRODUCTS STRUCTURE

			U.S. 1990 (BILLIONS)	% OF TOTAL
\$483 (50%)	CONSUMER	AUDIO/VIDEO & PHOTOGRAPHIC	\$ 39	(4%)
	ELECTRONICS \$57 (6%)	INFORMATION & COMMUNICATIONS	18	(2)
		MICROCOMPUTER & STORAGE SYSTEMS	52	(5)
		DATA & IMAGE	20	(2)
		I/O & OTHER SUPPLIES	18	(2)
	OFFICE			
	EQUIPMENT \$104 (11%)	COMMUNICATIONS NETWORKS	14	(2)
		GENERIC PROCESSING & STORAGE	105	(11)
	BUSINESS OPERATIONS	GENERIC OTHER	45	(5)
		COMMUN. CARRIER	42	(4)
EQUIPMENT \$322 (33%)	T/C EQUIPMENT OTHER INDUSTRY SPECIFIC	130	(13)	

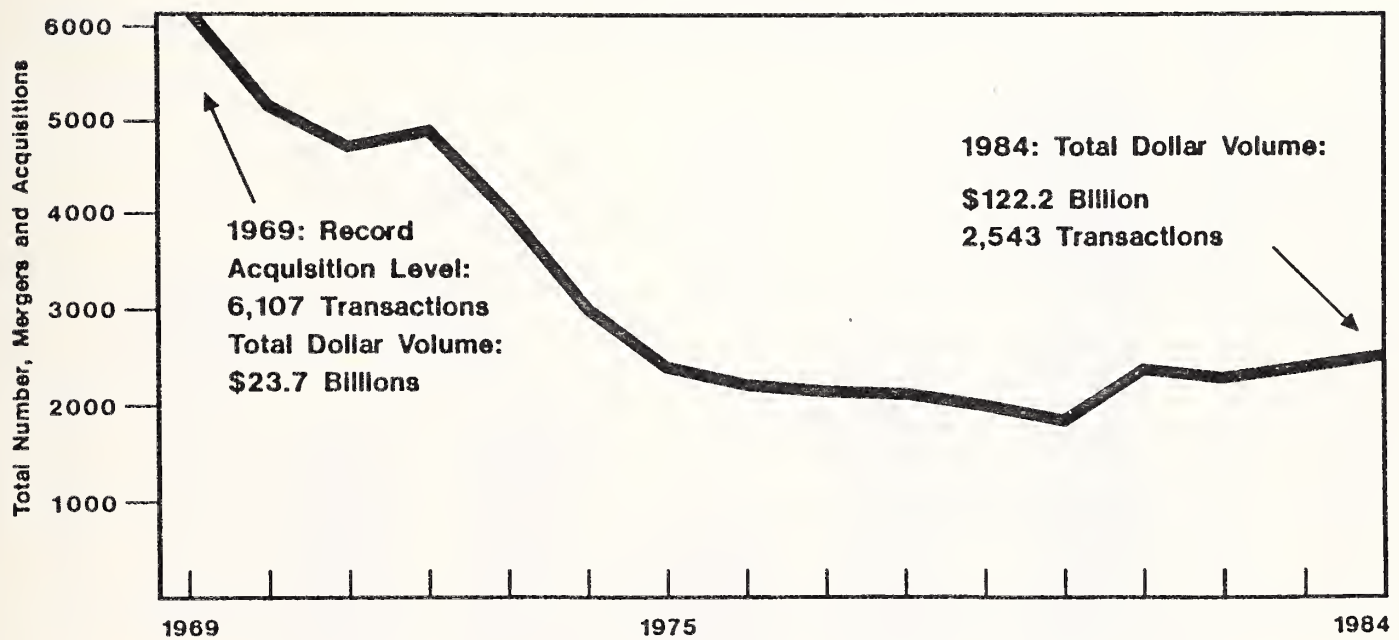
Source: Booz-Allen & Hamilton Inc.

INFORMATION SERVICES/SOFTWARE INDUSTRY STRUCTURE



© Broadview Associates, 1984

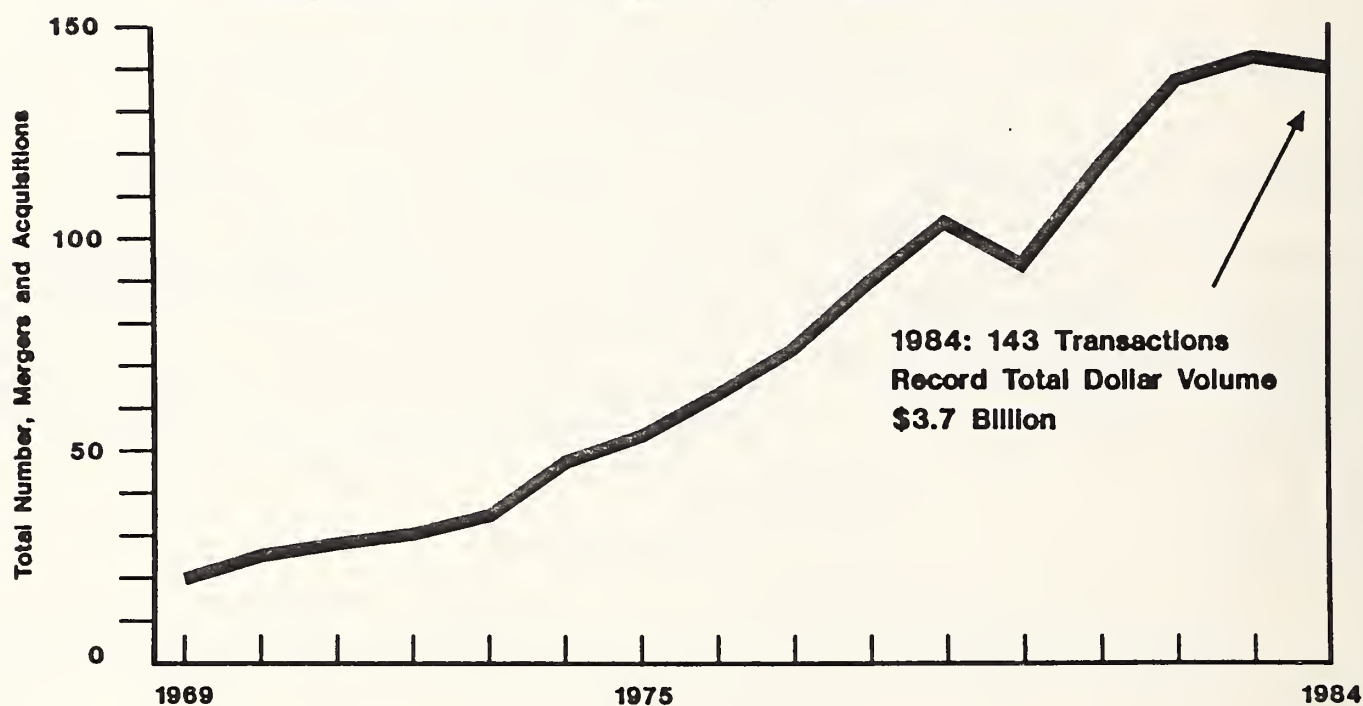
History of MERGER and ACQUISITION ACTIVITY ALL INDUSTRIES*



W.T. Grimm & Co.

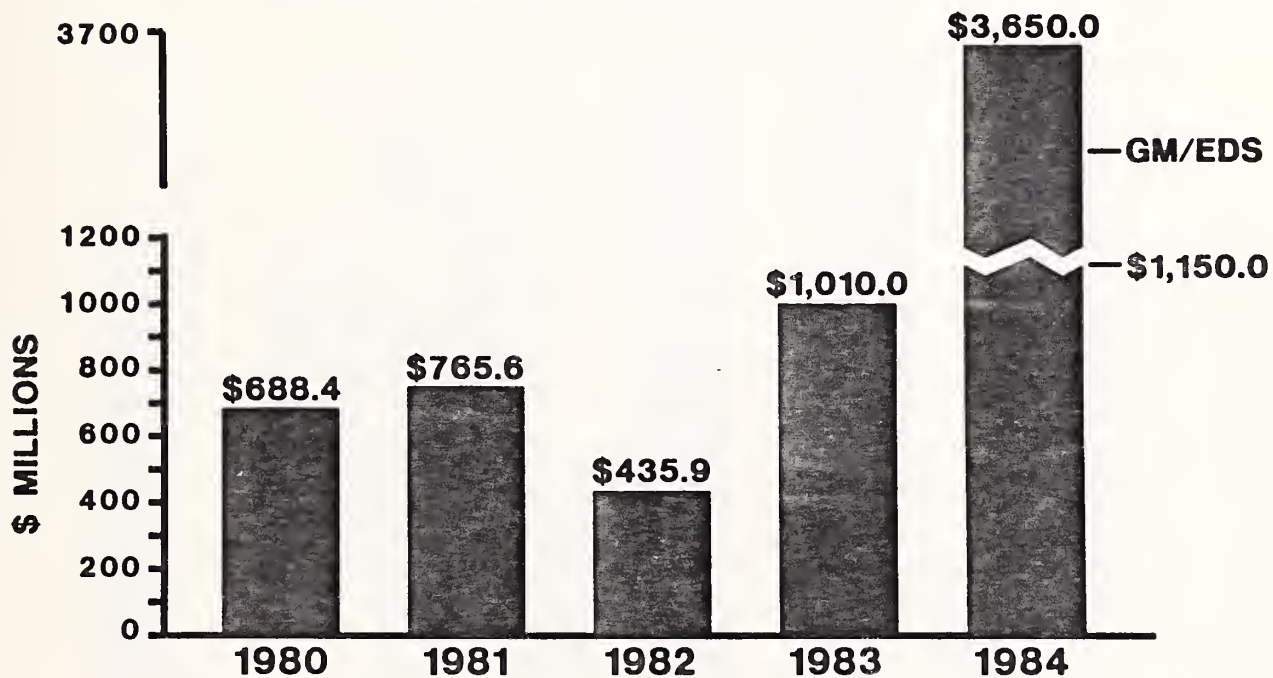
Broadview Associates

History of MERGER and ACQUISITION ACTIVITY INFORMATION SERVICES/SOFTWARE INDUSTRY



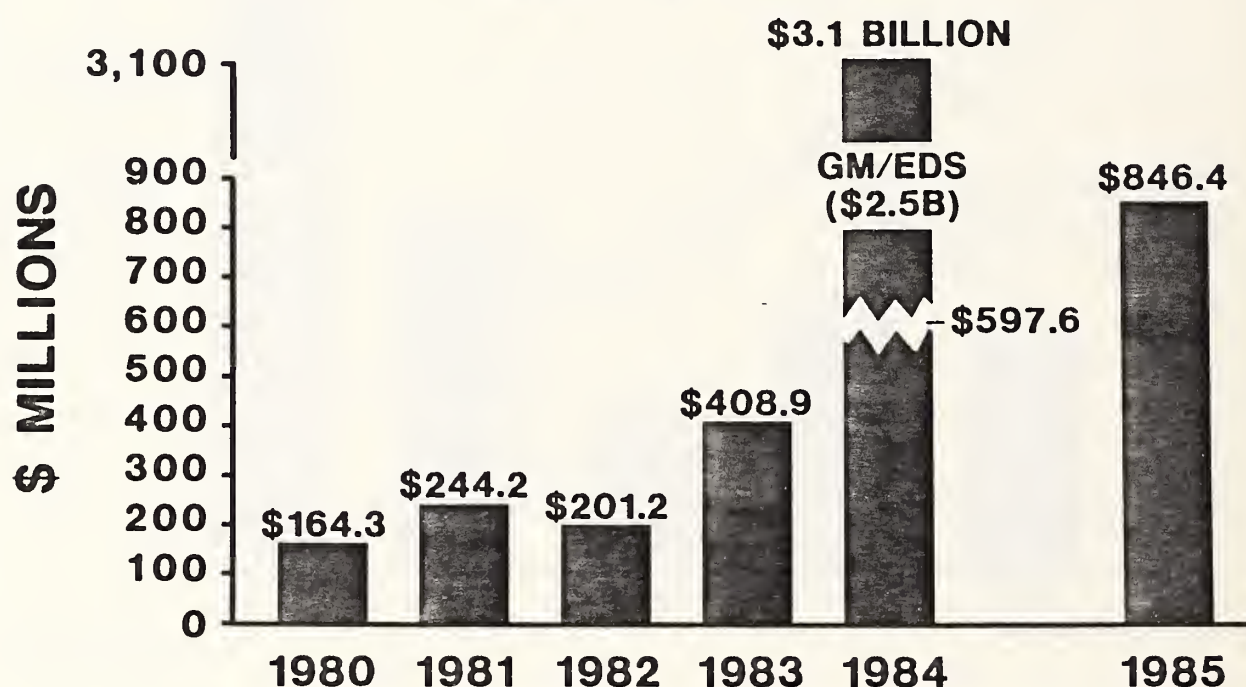
Source: Broadview Associates

INFORMATION SERVICES/SOFTWARE INDUSTRY MERGERS & ACQUISITIONS HISTORICAL GROWTH 1980-1984 TOTAL \$ VALUE



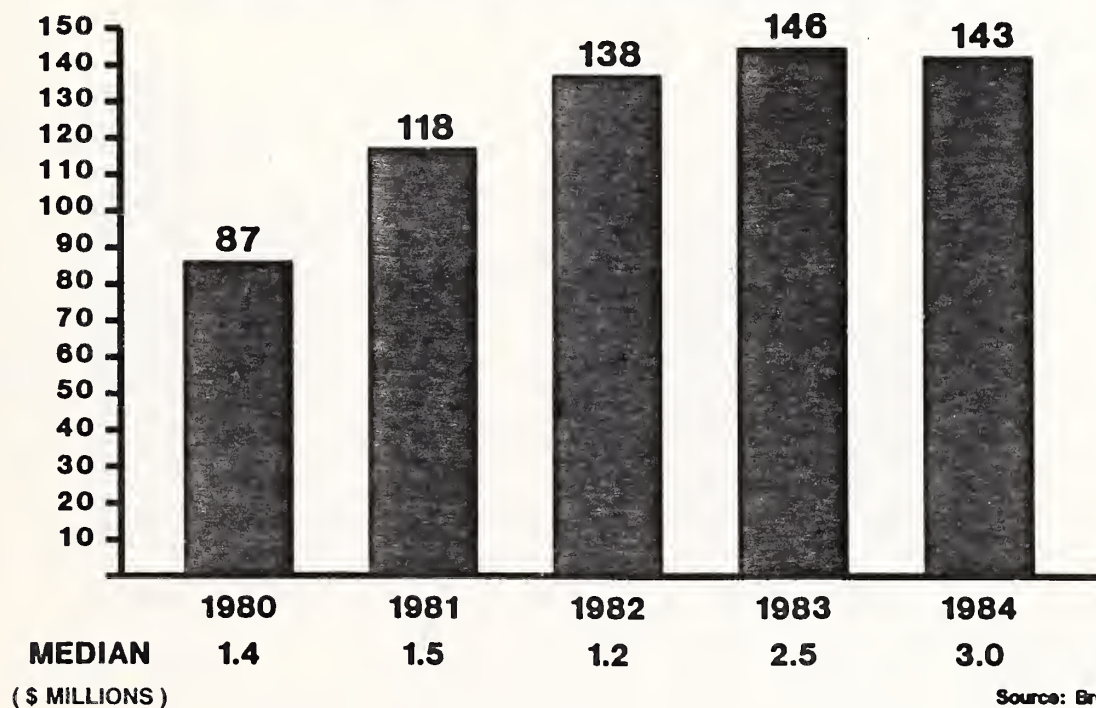
Source: Broadview Associates

**INFORMATION SERVICES/SOFTWARE INDUSTRY
MERGERS & ACQUISITIONS
HISTORICAL GROWTH
FIRST SIX MONTHS 1980 - 1985
TOTAL \$ VALUE**



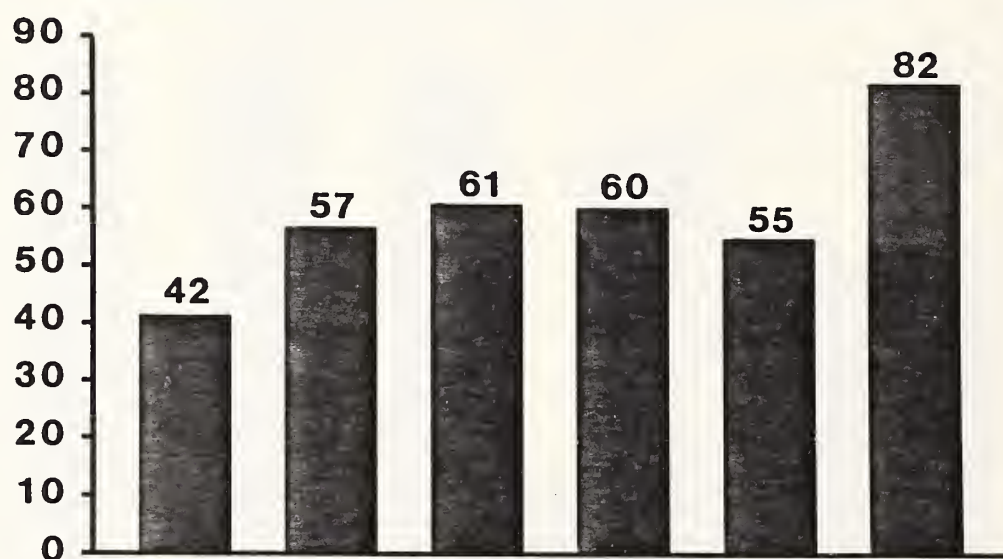
SOURCE: BROADVIEW ASSOCIATES

INFORMATION SERVICES/SOFTWARE INDUSTRY MERGERS & ACQUISITIONS HISTORICAL GROWTH 1980-1984 NUMBER OF TRANSACTIONS



Source: Broadview Associates

**INFORMATION SERVICES/SOFTWARE INDUSTRY
MERGERS & ACQUISITIONS
HISTORICAL GROWTH
FIRST SIX MONTHS 1980 - 1985
NUMBER OF TRANSACTIONS**



	1980	1981	1982	1983	1984	1985
AVERAGE	\$3.9	\$4.3	\$3.3	\$6.8	-	\$10.3
MEDIAN	\$1.0	\$1.5	\$1.3	\$3.0	\$4.0	\$3.7

SOURCE: BROADVIEW ASSOCIATES

**THE LARGEST TRANSACTIONS
IN THE HISTORY
OF THE COMPUTER SERVICES
INDUSTRY**

March 1984

**McDonnell Douglas Corp./Tymshare Inc.
\$307 Million**

June 1984

**General Motors Corp./Electronic
Data Systems Corp.
\$2.5 Billion**

SOURCE: BROADVIEW ASSOCIATES

OTHER MAJOR TRANSACTIONS DURING 1984

<u>Firm Acquired</u>	<u>By Whom</u>	<u>Total Consideration Paid (Millions)</u>
Mediflex Systems Corp.	HBO & Co.	\$ 82.9
Monchik Weber Corp.	McGraw-Hill Inc.	55.3
Amherst Associates Inc.	HBO & Co.	50.0
Thomas National Group	Dun & Bradstreet Corp.	45.0
CGA Computer Associates Inc.	Senior Management & General Atlantic Corp.	44.3
Datacom Systems Corp.	Lockheed Corporation	38.0
ADVO Systems, Inc.	John Blair & Co.	36.0
Execucom Systems Corp.	Continental Telecom, Inc.	18.0
Sorcim Corporation	Computer Associates International Inc.	17.6
Cyma Corp.	McGraw-Hill Inc.	15.5

Source: Broadview Associates

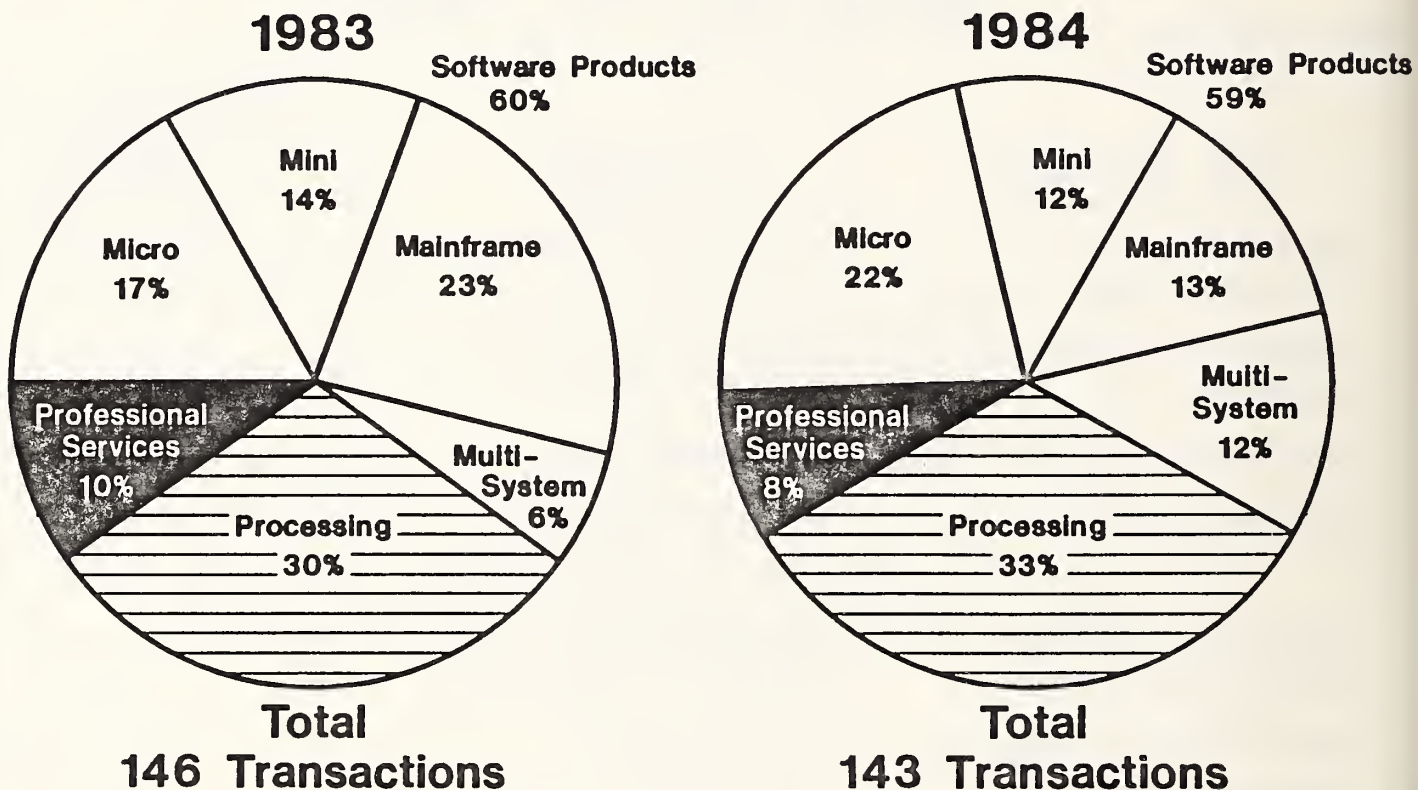
MAJOR TRANSACTIONS DURING THE FIRST SIX MONTHS OF 1985

<u>Firm Acquired</u>	<u>By Whom</u>	<u>Total Consideration Paid (Millions)</u>
Informatics General Corp.	Sterling Software, Inc.	\$126.0
Metier Management Systems	Lockheed Corp.	120.0*
Electronic Modules Corp.	Rexnord, Inc.	106.0
Compucare, Inc.	Baxter Travenol Laboratories, Inc.	73.0
Advanced System Applications, Inc.	Equitable Life Assurance Society of the U.S.	60.0
Management Decision Systems, Inc.	Information Resources, Inc.	38.5

*Broadview Associates Estimate

SOURCE: BROADVIEW ASSOCIATES

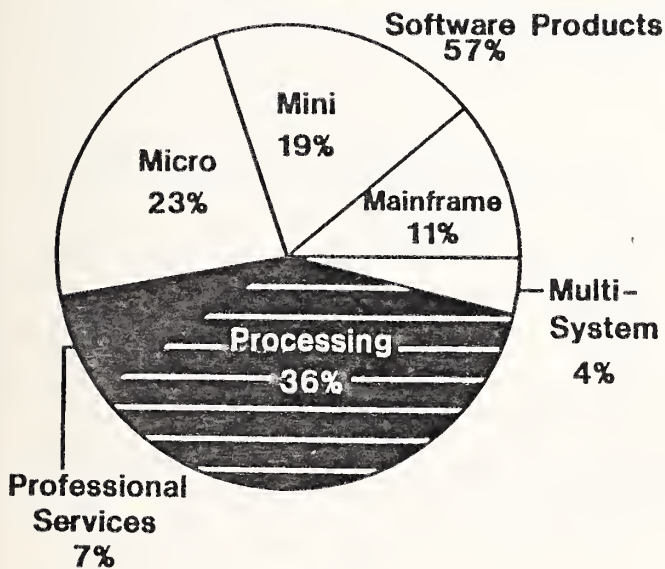
TYPE OF ACQUISITIONS AS PERCENT OF TOTAL ACTIVITY



Source: Broadview Associates

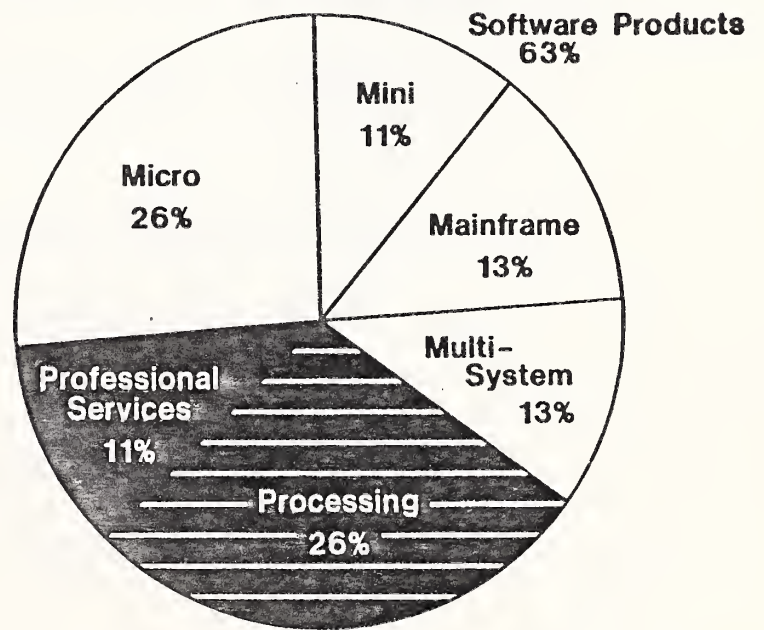
TYPE OF ACQUISITIONS AS PERCENT OF TOTAL ACTIVITY

**FIRST 6 MONTHS
1984**



**Total
55 Transactions**

FIRST 6 MONTHS 1985



**Total
82 Transactions**

SOURCE: BROADVIEW ASSOCIATES

1982 - 1984

Total No. Of Acquisitions - 427

Total No. Of Acquirers - 303

- **83 Companies Accounted For 76% Of The Transactions**
- **14 Companies Accounted For 25% Of The Transactions**

Source: Broadview Associates

ACQUISITION LEADERS

COMPANY**NO. OF TRANSACTIONS - 1984**

McGraw-Hill, Inc.	● ● ● ● ●
First Financial Management Corp.	● ● ● ●
TLS Company	● ● ● ●
Automatic Data Processing, Inc.	● ● ●
Computer Associates International, Inc.	● ● ●
Computer Task Group, Inc.	● ● ●
Control Data Corporation	● ● ●
Informatics General Corporation	● ● ●
AGS Computers, Inc.	● ●
American Physicians Service Group, Inc.	● ●
Computer Language Research, Inc.	● ●
Endata, Inc.	● ●
HBO & Company	● ●
McDonnell Douglas Corporation	● ●
Management Science America, Inc.	● ●
NCA Corporation	● ●
Philadelphia Suburban Corporation	● ●
Strategic Information	● ●
UCCEL Corporation	● ●

Source: Broadview Associates

SOME MAJOR U.S. CORPORATIONS WHO HAVE ENTERED THE COMPUTER SERVICES INDUSTRY VIA ACQUISITION WITHIN THE PAST FIVE YEARS

- Allied Corp. • American Brands, Inc. • American Express Co.
- American General Corp. • Ashland Oil, Inc. • Becton Dickinson & Co.
- Burroughs Corp. • Continental Telecom, Inc. • Delta Air Lines, Inc.
- Dun & Bradstreet Corp. • H & R Block, Inc. • Hewlett-Packard Co.
- International Telephone & Telegraph, Inc. • McGraw-Hill, Inc.
- Minnesota Mining & Manufacturing, Inc. • Prentice-Hall, Inc.
- Reader's Digest Assn. • The Hearst Corp. • The Travelers Corp.

AND, MORE RECENTLY...

- American Hospital Supply Corp. • Cigna Corp. • CNA Financial Corp.
- Continental Corp. • General Motors Corp. • Hallmark Cards, Inc.
- McKesson Corp. • Warner Communication, Inc.

Source: Broadview Associates

PUBLIC COMPANIES WHO WERE ACQUIRERS IN 1984

AGS Computers, Inc.
 American Hospital Supply Corp.
 American Physicians Service
 Group, Inc.
 Automatic Data Processing, Inc.
 BankAmerica Corp.
 Boole & Babbage, Inc.
 Burroughs Corp.
 CGA Computer Associates, Inc.
 Chase Manhattan Bank
 Cigna Corp.
 Citicorp
 Cognitronics Corp.
 Computer Associates Intn'l., Inc.
 Computer Language Research, Inc.

Computer Sciences Corp.
 Computer Task Group
 Computone Systems, Inc.
 Continental Telecom, Inc.
 Continuum Company
 Control Data Corp.
 Cullinet Software, Inc.
 CyCare Systems, Inc.
 Daisy Systems Corp.
 Dun & Bradstreet Corp.
 Duquesne Systems, Inc.
 Electronic Data Systems Corp.
 Emulex Corp.
 Endata, Inc.

(Continued)

Source: Broadview Associates

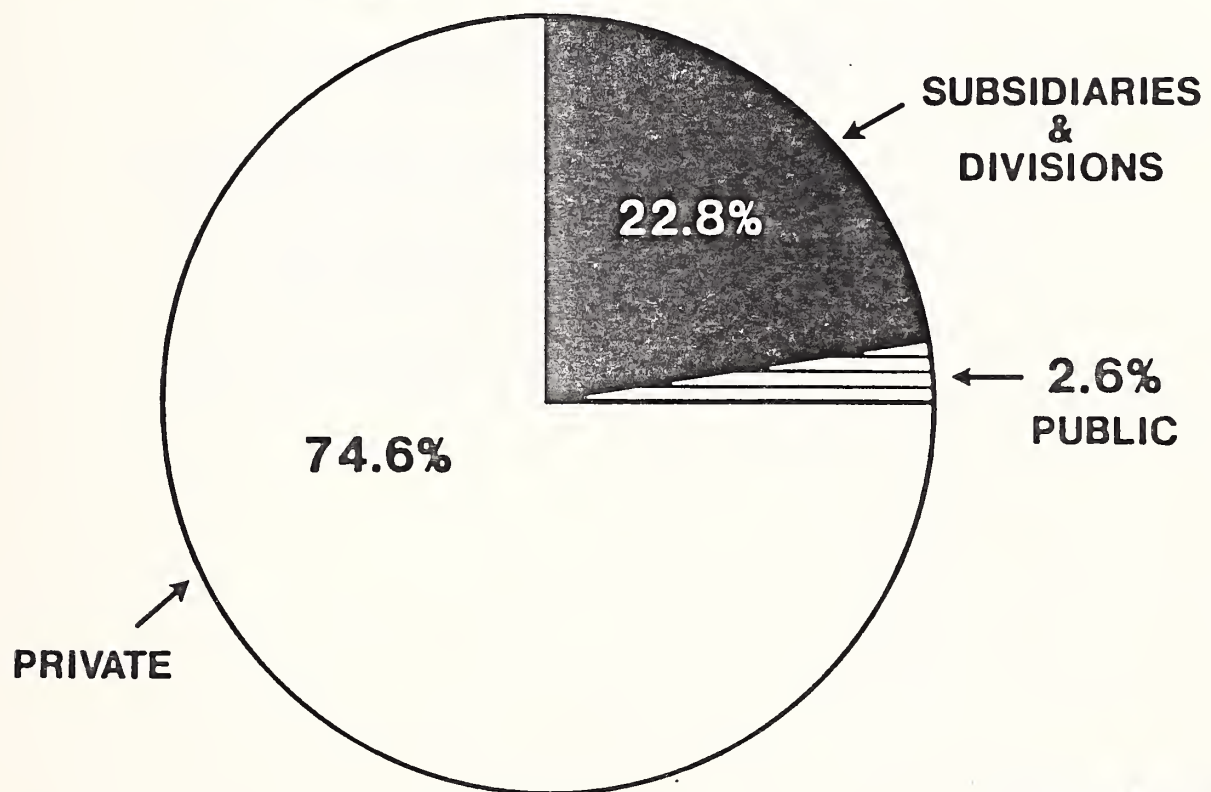
(Continued)

PUBLIC COMPANIES WHO WERE ACQUIRERS IN 1984

General Motors Corp.	National Computer Systems, Inc.
Grumman Corp.	NBI, Inc.
HBO & Co.	NCA Corp.
Honeywell, Inc.	On-Line Software International, Inc.
Informatics General Corp.	Pansophic Systems, Inc.
Information Science, Inc.	Philadelphia Suburban Corp.
John Blair & Co.	Prentice-Hall, Inc.
Litton Industries, Inc.	Rand Information Systems, Inc.
Lockheed Corp.	Safeguard Business Systems, Inc.
MacNeal-Schwendler Corp.	Scientific Software-Intercomp, Inc.
Management Science America, Inc.	SEI Corp.
Martin Marietta Corp.	Telecom Plus International
McDonnell Douglas Corp.	TLS Company
McGraw-Hill, Inc.	Uccel Corp.
Metromail Corp.	United Telecommunications, Inc.

Source: Broadview Associates

OWNERSHIP OF ACQUIRED COMPANIES 1981 - 1984



Source: Broadview Associates

Synergy

- **Expand Product Line**
 - **Market Share**
 - **Geographic Coverage**
 - **Reduce Expenses**
-

Growth Requirements

- Working capital
 - Management expertise
 - Marketing expertise
 - Competent technical staff
 - Support organization
 - Network capability
-

Critical Decision Point in Development

- Continue as is
 - Seek capital infusion
 - Find a "big brother"
-

Seller's Objectives

- **Create Wealth**
- **Credibility**
- **Management**
- **Marketing**
- **Technical Support**
- **Financing**
- **Exploit capability**
- **Play in bigger arena**
- **Smaller share of larger pie**

Who are the Acquirers

- **Computer Service companies**
- **Computer Manufacturers**
- **Major Corporation**
- **Financial Institutions**
- **Foreign Corporation**
- **Venture Capitalists**

Characteristics of Successful Acquirers

- **Part of a Strategic Plan**
 - **Top Management Commitment**
 - **Continuous Program**
 - **Responsibility Clearly Assigned**
 - **Sensitivity to Seller's Motives**
 - **Ability to Integrate**
 - **Integrity**
-

What Acquirers are Looking For?

- Return on investment
- Quality management
- Commitment to build business
- Leverage
- Client base reference
- New/proven product - reference selling
- Industry/product expertise
- Support organization
- Market share

Prerequisites for a Successful Merger

- Identical selfish motives
 - Realistic approach by both buyer & seller
 - Willingness to give & take
(You can't win every point without losing one)
 - Valid basis for merging
 - Mutuality of wants & goals
 - Willingness to work
 - High level of integrity
 - Sufficient market potential
 - Combined skills & assets
-

Why Mergers Fail

- **Insufficient basis for merger**
 - **Lack of understanding**
 - **Lack of candor**
 - **Poorly structured**
-

FUTURE GROWTH PLAN:

“BUY NOT MAKE”

- **1980 – 1984**
 - **650 Deals**
 - **\$6.5 Billion**
 - **1980 – 1989**
 - **1,500 Deals**
 - **\$20 Billion**
-

**EDWARD I. METZ
PARTNER
BROADVIEW ASSOCIATES**

Edward I. Metz joined Broadview Associates in 1984 from INPUT.

In 1969 Mr. Metz became a Vice President of the Cypernetics Corporation, a time-sharing company subsequently acquired by Automatic Data Processing, Inc. He became ADP's Director of Corporate Development, a post he held until 1977 when he joined INPUT.

Mr. Metz began his business career with Philco-Ford, later moving to its parent, Ford Motor Company, where as Manager of Equipment and Software Planning he was responsible for systems coordination in one of the world's largest data processing centers.

He holds a Bachelor of Science degree in Physics from St. Joseph's University and has done postgraduate work at the University of Pennsylvania.

ELECTRONIC DATA INTERCHANGE: OPPORTUNITIES AND CHALLENGES

**David Rousseau
Staff Vice President – Marketing
McDonnell Douglas
Information Systems Group**

DAVID M. ROUSSEAU
STAFF VICE PRESIDENT - MARKETING
MCDONNELL DOUGLAS INFORMATION SYSTEMS GROUP

Mr. Rousseau has more than 20 years of industry experience including four years with Computer Sciences Corporation and 16+ years with McDonnell Douglas. He started as a Programmer and progressed through the technical ranks in both Computer Sciences and McDonnell Douglas Corporation.

He has spent the last eight years in Business and Market Planning prior to becoming Vice President - Corporate Marketing, McDonnell Douglas Automation Company in 1984.

As Vice President of Marketing for McAuto, he was responsible for planning, acquisitions, marketing, and advanced technology direction. He was actively involved in numerous acquisitions, including the McDonnell Douglas acquisition of TYMSHARE.

Recently, he was promoted to Staff Vice President - Marketing, McDonnell Douglas Information Systems Group and is responsible for marketing communications, marketing policy and research, intercompany pricing, and special events on an Information Systems Group basis.

Mr. Rousseau holds an Undergraduate Degree in Math and an MBA from St. Louis University.

MICRO-MAINFRAME: CATALYST TO DEPARTMENTAL PROCESSING

**I. Steven Kerns
Director
Information Systems Research
INPUT**

STAGES OF MICRO USAGE IN BUSINESS

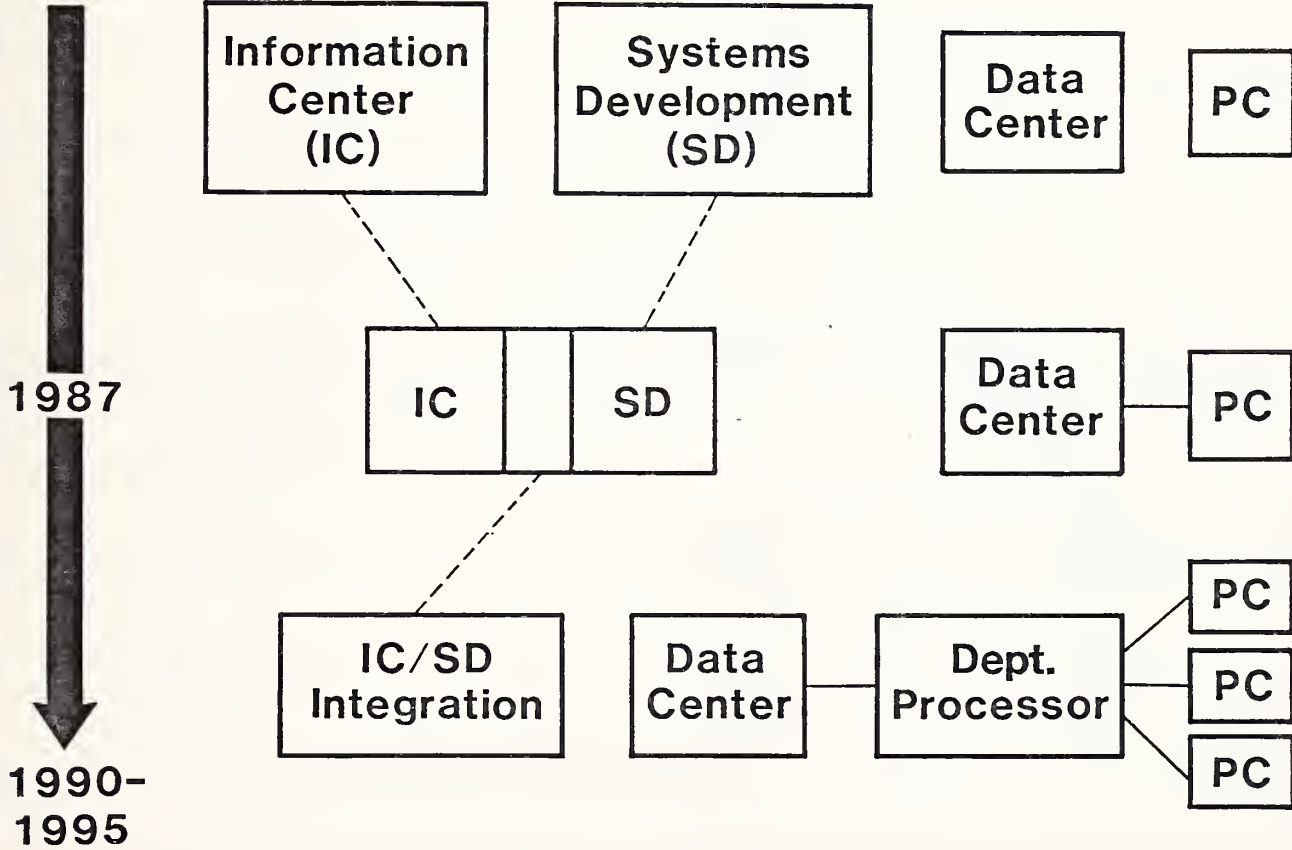
- 1. Single Micro Applications**
 - 2. Integrated Software**
 - 3. 3270 Emulation**
 - 4. Bulk File Transfers**
 - 5. Specific Data Selection**
 - 6. M-M Integrated Functionality**
-

MICRO-MAINFRAME MARKET IS UNSETTLED

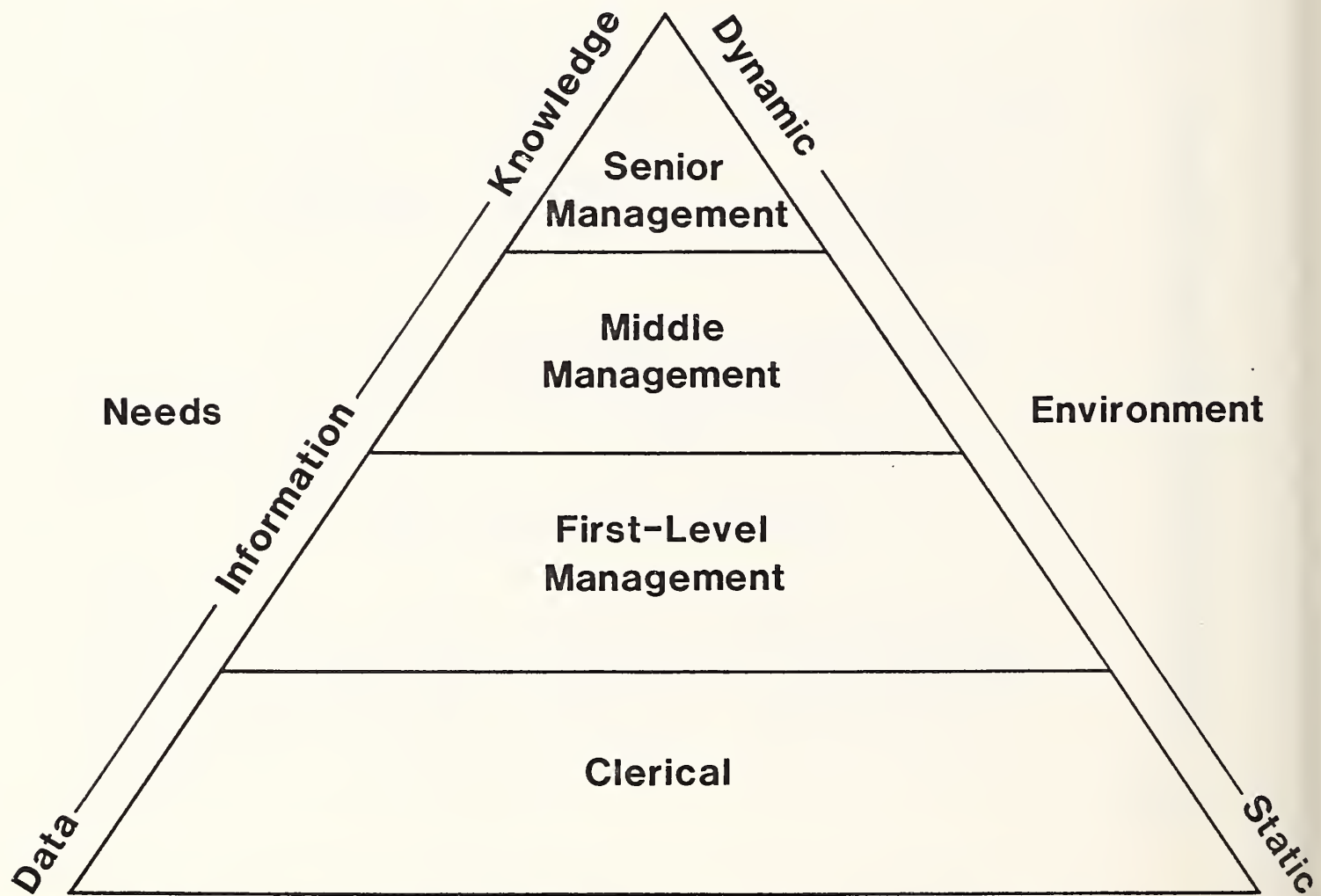
- **No Leading Vendors**
 - **No Total Solution Product**
 - **No Standard Product for Specific Application**
 - **No Standard Price**
 - **Very Limited IBM Products**
-

HOW WILL M-M IMPACT I.S.?

1983-
1985



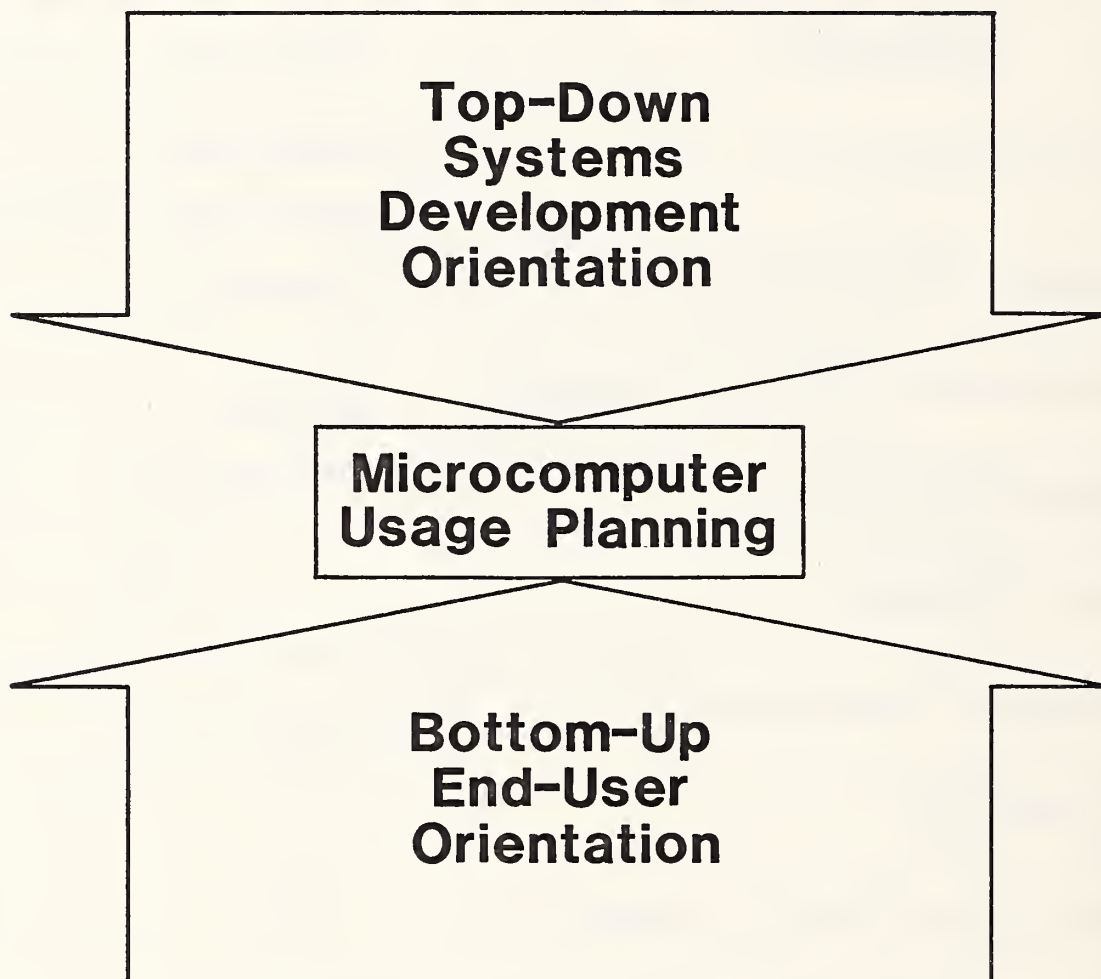
END-USER COMPUTING MOVES TO THE TOP



M-M DRIVING FORCES

Demand	Source	Priority
Decision Support Strategic Planning	Business Analysts/ Planners	Immediate
Performance Measurement Tactical Planning	Middle Management	1-3 Yrs.
Project Status Strategic Overview Forecasting	Executive Management	2-5 Yrs.
Transaction Processing	IS	> 3 Yrs.

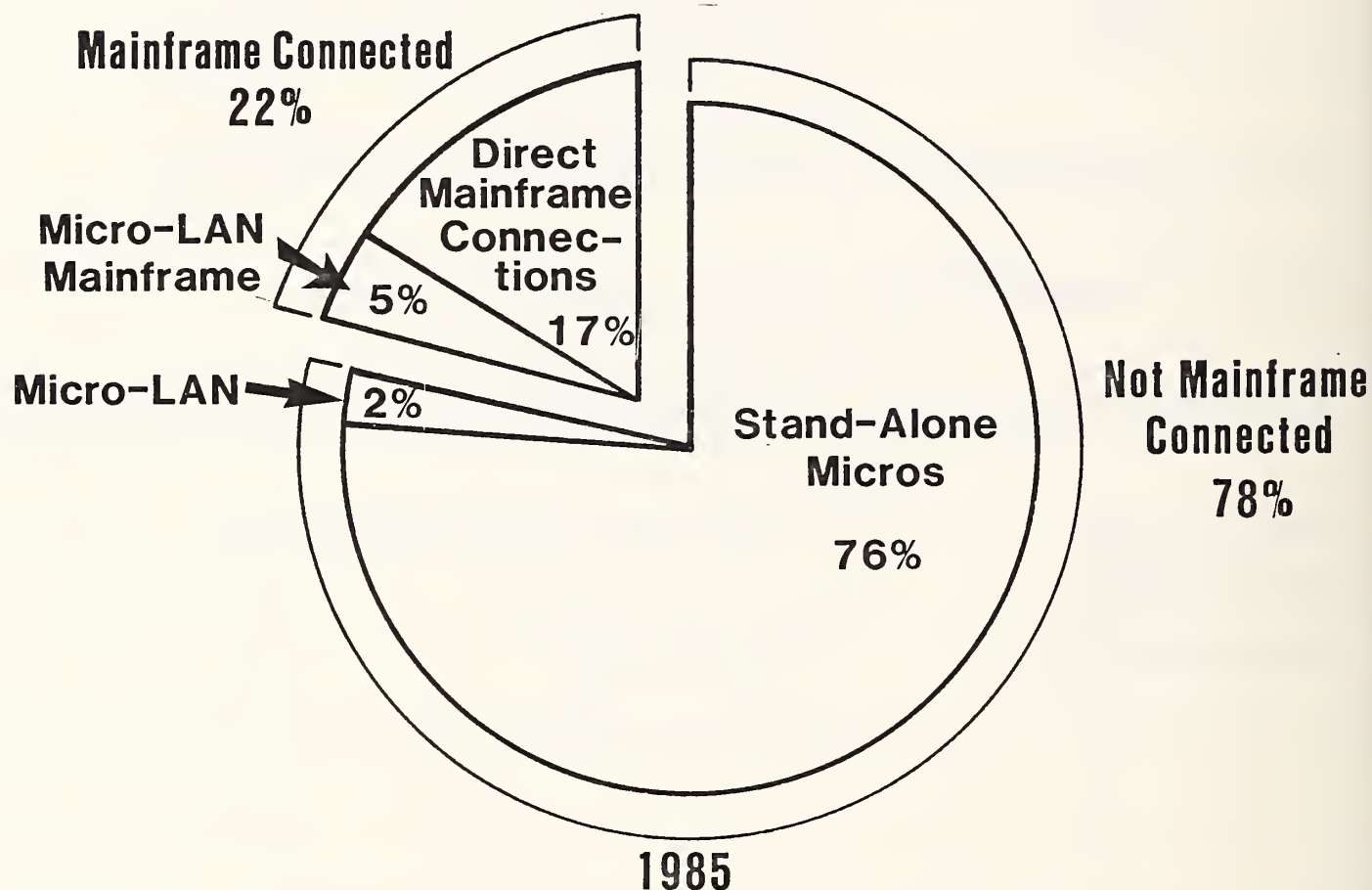
TOP-DOWN, BOTTOM-UP M-M PLANNING



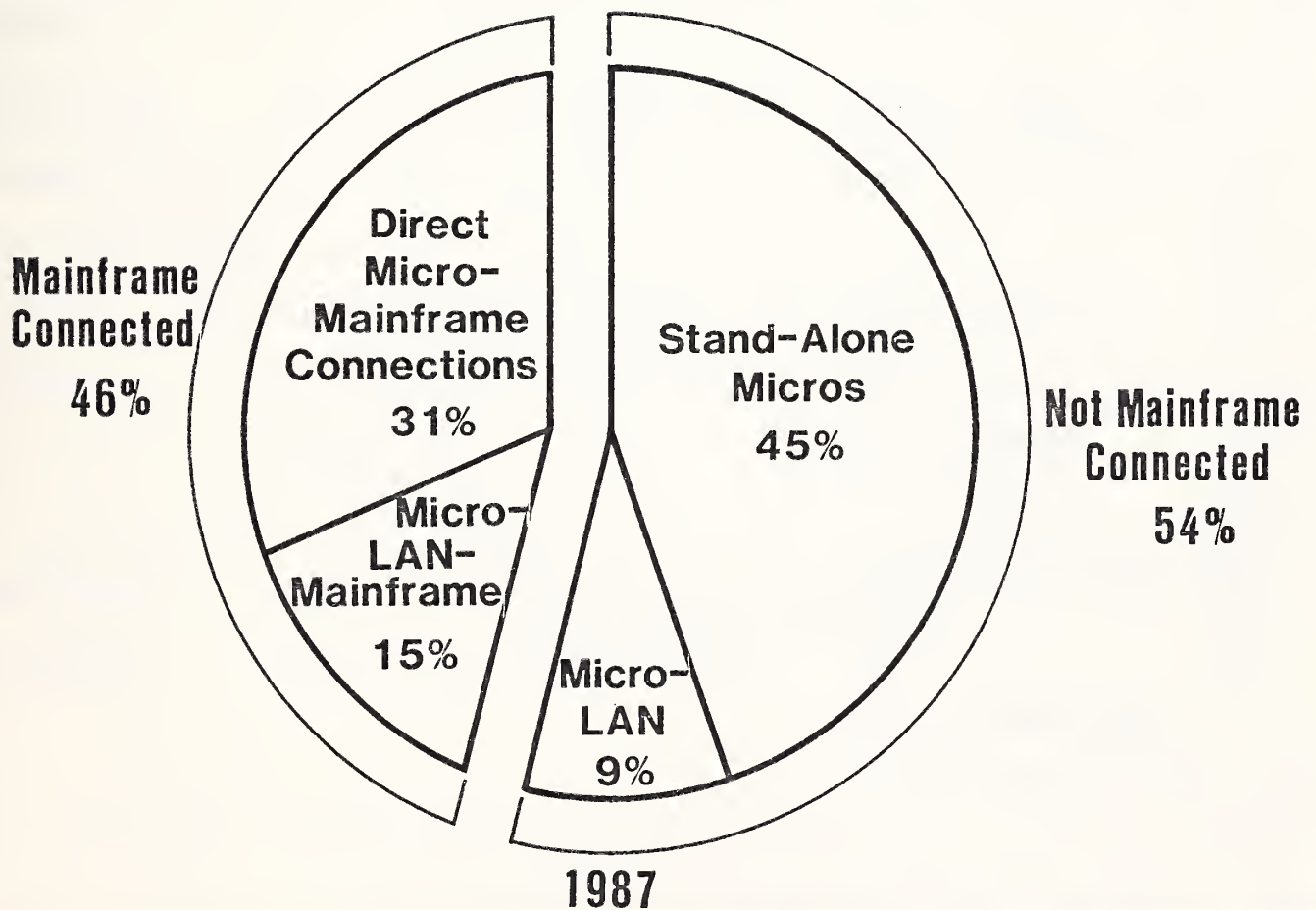
WHAT ARE THE PROS AND CONS?

Micro-Mainframe Links	
Pros	Cons
Data Availability	Security/Data Integrity
Data Timeliness	Increased Training
Reduced Backlog	Mainframe Capacity Problems
Improved End-User Productivity	Increased IS Support

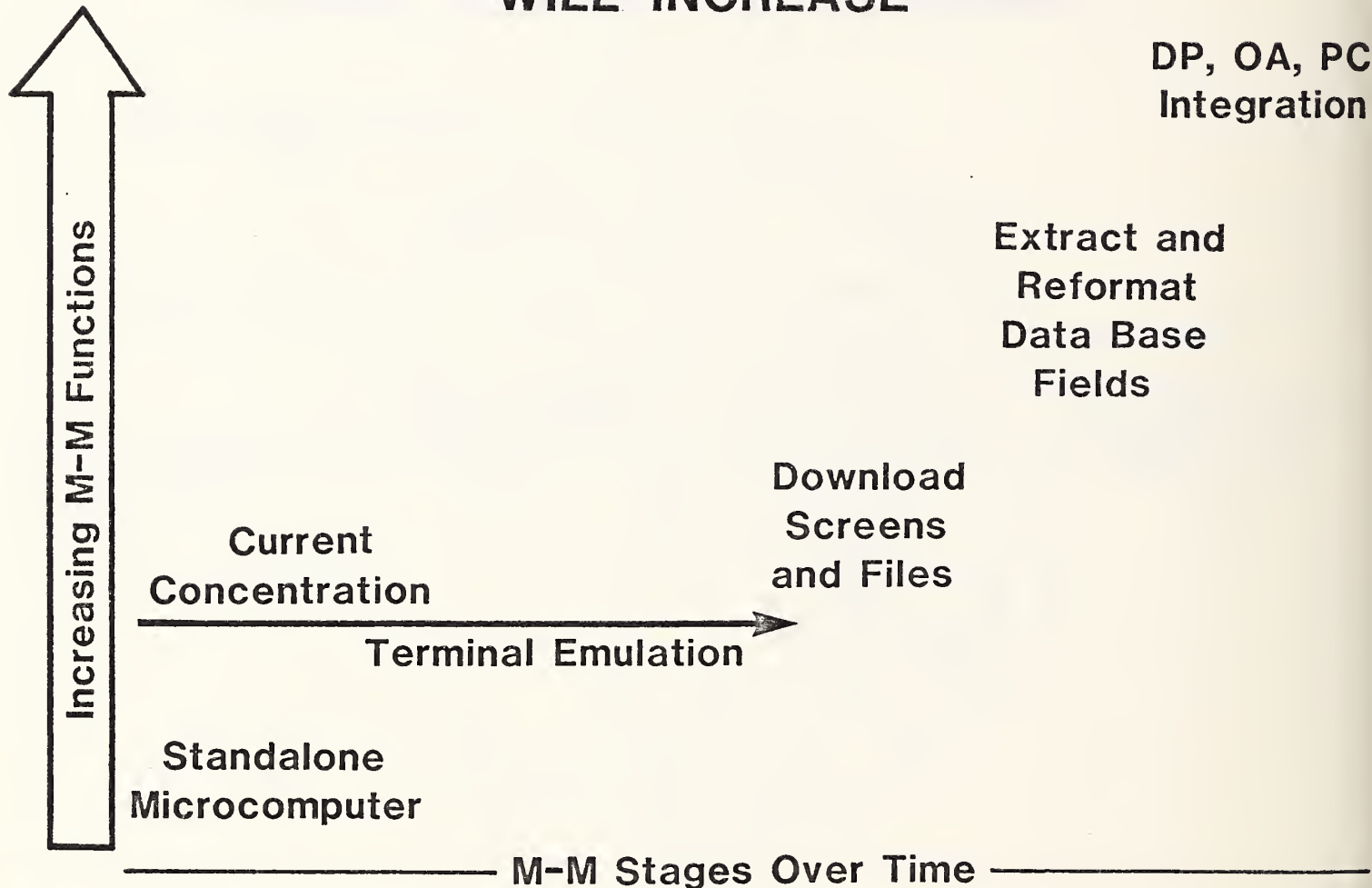
M-M CONNECTIVITY BY PERCENT OF TOTAL MICROS - SURVEY RESULTS



M-M CONNECTIVITY BY PERCENT OF TOTAL MICROS - SURVEY RESULTS

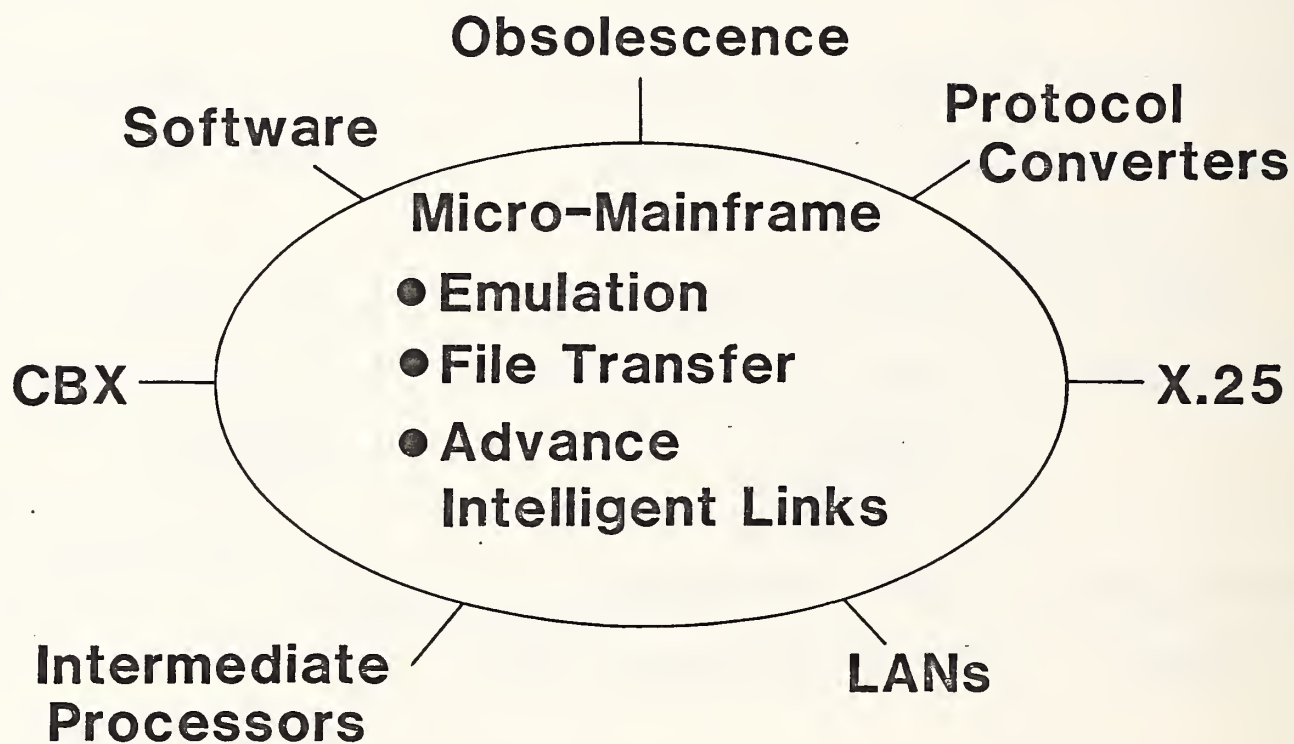


DEMANDS FOR MICRO-MAINFRAME LINKS WILL INCREASE



TYPES OF MICRO-MAINFRAME LINKAGES

Type	Benefits	Limitations
Terminal Emulation	Micros Connect to Mainframe	Micro Becomes Dumb Terminal
File Transfer	Mainframe Data Can Be Used by Micro	Customized Programming Required
Intelligent Links	Data Extracts from Several Files	Only Accesses Specific Applications

COMPLEX COMMUNICATIONS FORCES AFFECT M-M

**MOST SUITABLE
MICRO-MAINFRAME APPLICATIONS
AS PERCEIVED BY I.S.**

- **Financial Analysis**
 - **Sales/Marketing Analysis**
 - **Human Resource Benefits Analysis**
 - **Office Automation**
-

WHAT ARE IBM'S LINK STRATEGIES?

Category	Products
Hardware	- S/36 - PC AT/370
Software	- DisplayWrite - Personal Services
Network	- SNA/SDLC - APPC
Protocols	- DIA/DCA - DISOSS
M-M Links	- PDS Attachment/36/370

WHAT ARE IMPORTANT M-M CHARACTERISTICS?

- **Supports Current Environment**
 - **Provides Both Inquiry and Update Functions**
 - **Provides Non-Technical User Interfaces**
 - **Requires Limited Customization**
 - **Utilizes Existing Security**
-

BEWARE OF HIDDEN COSTS

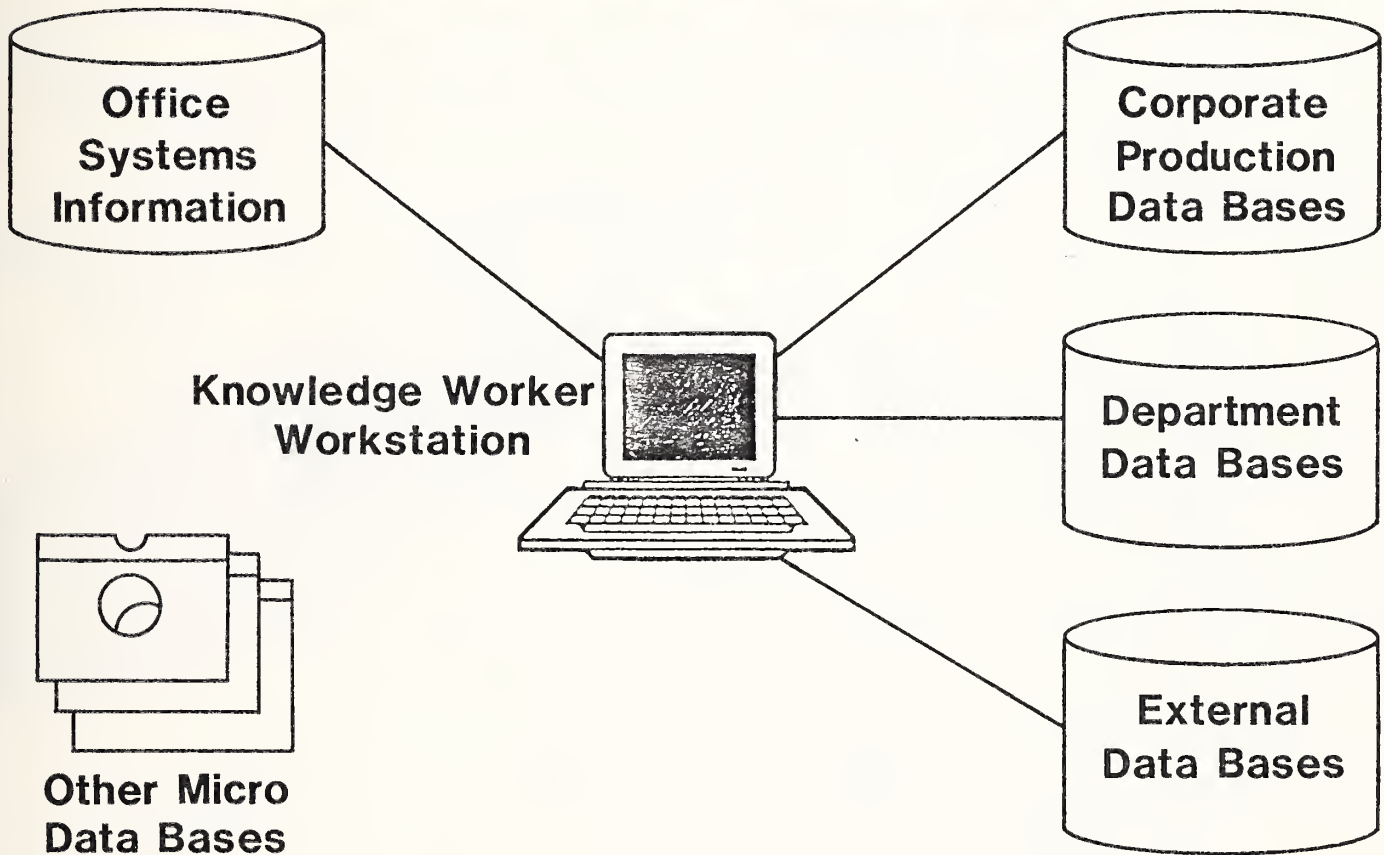
Visible

- License Fees
- Async/Sync Hardware

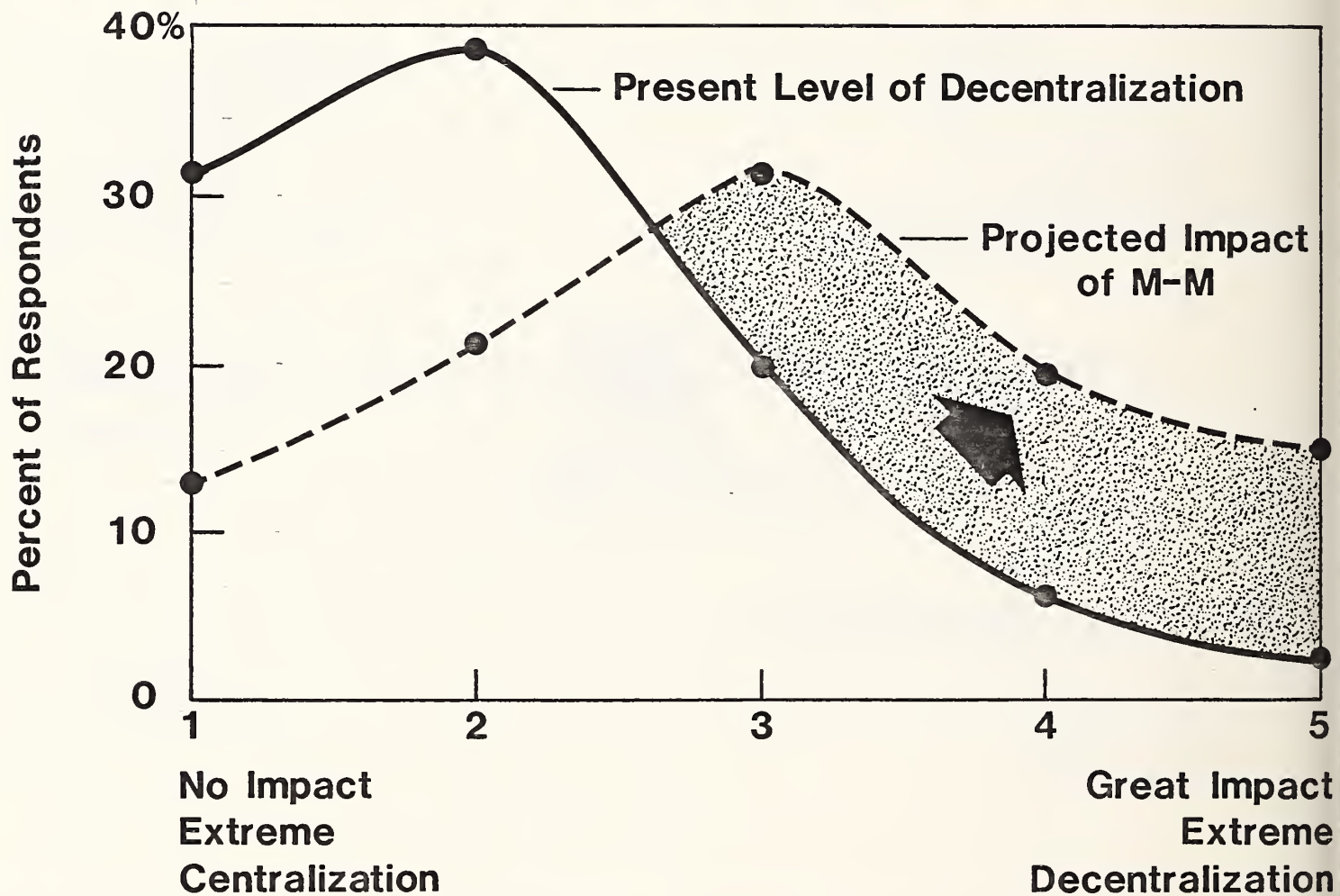
Hidden

- Customization
 - Host Capacity
 - Network Load
 - Controller Capacity
-

INTEGRATING THE MICROCOMPUTER



M-M IS SHIFTING I.S. TOWARDS DECENTRALIZATION



I. STEVEN KERNS
DIRECTOR, INFORMATION SYSTEMS RESEARCH
INPUT

I. Steven Kerns is the Director of INPUT's Information Systems Research Program. His seventeen years of experience in the information industry include information systems management, systems planning, consulting, product development, and marketing. Most recently, he established and developed integrated office automation solutions for ATARI, Inc. These included systems for word processing, text management, electronics and voice mail, electronic filing, personal computers, and decision support.

Mr. Kerns holds a B.A. from Long Beach State University and an M.B.A., with honors, from Golden Gate University.

**EXPERT SYSTEMS:
A FOCUS ON VALUE**

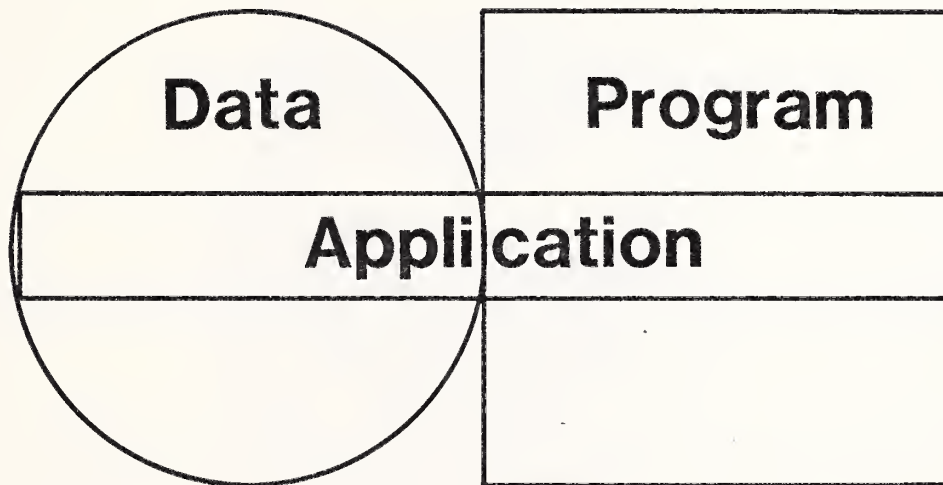
**Harry C. Reinstein
President
AION**

WHAT ARE EXPERT SYSTEMS?

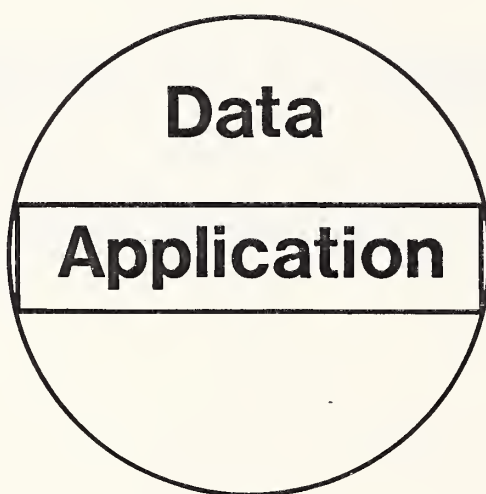
EXPERT SYSTEMS

**An Approach to Developing Applications
which Promises Substantial and
Identifiable Benefits**

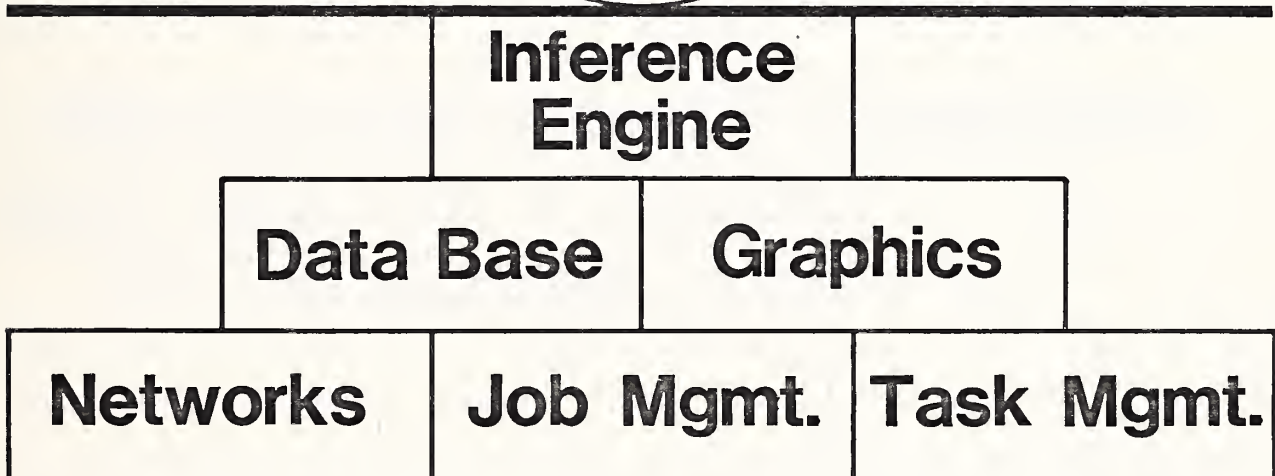
TRADITIONAL APPLICATION STRUCTURE



EXPERT SYSTEM STRUCTURE



THERE IS NO MAGIC . . .



TRADITIONAL APPLICATION

Data: Tax Tables

Income

Marital Status

**Program: If Client is Married and
Income > \$30,000 then
Go to Subroutine XYZ**

EXPERT SYSTEM APPLICATION

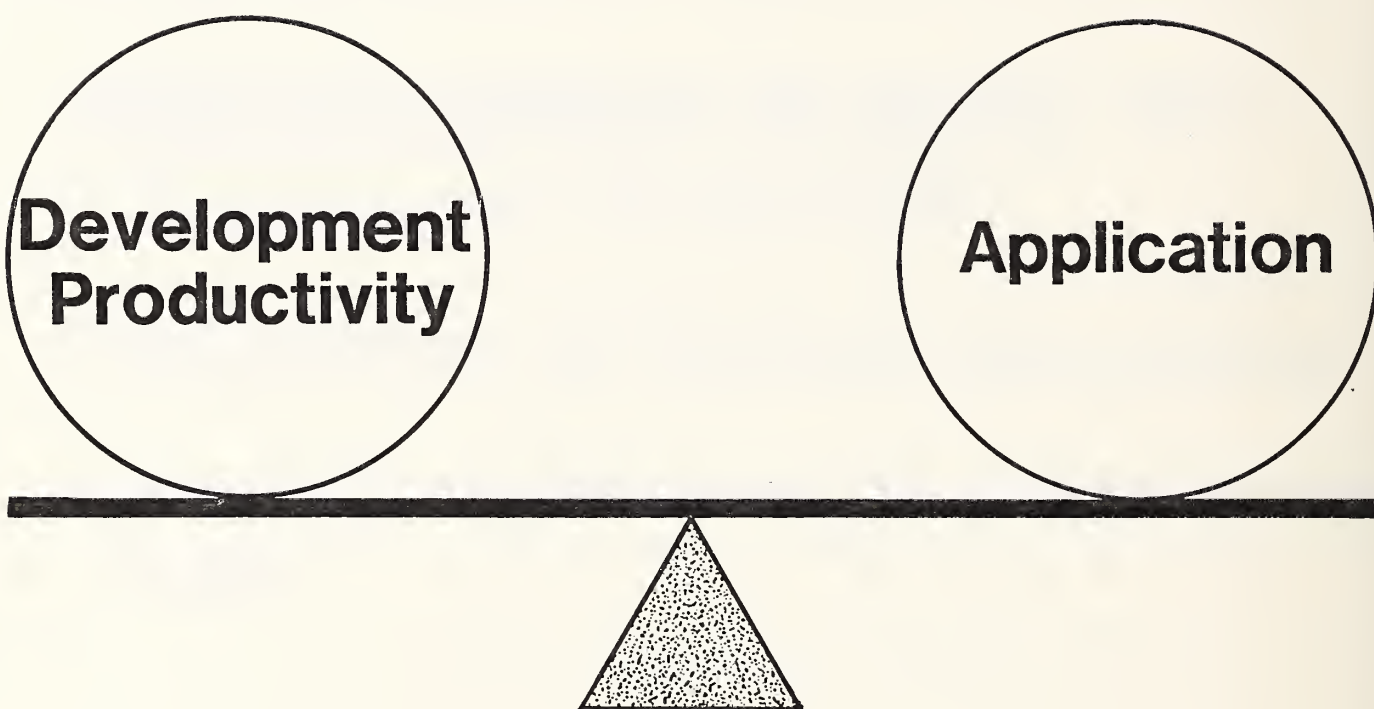
**If Client is Married
and Income > \$30,000
then Tax-Computation is Itemized**

SIGNIFICANCE OF EXPERT SYSTEMS

- **Substantial Improvement in Development Productivity**
 - **Involvement of Problem Specialists**
 - **Practical Application of Judgemental Logic**
-

THE VALUE OF EXPERT SYSTEMS

INPUT



VALUE

Productivity:

- **Focus on Short-Term Projects**
 - **Management of Change**
 - **Leverage System Function**
-

VALUE

Application:

- **Improve Task Performance**
 - **Consistency of Results**
 - **Completeness of Process**
-

FOCUS ON VALUE

**Choosing an Application is
the Most Important Step**

OPPORTUNITIES FOR EXPERT SYSTEMS

- **Data Analysis**
 - **Procedure Checklist**
 - **Selection**
-

APPLICATION CHARACTERISTICS

- **Well Understood**
 - **Judgemental**
 - **Subject to Change**
 - **Broad Range of Task Performance**
 - **Improvement of Task Performance Returns Value**
-

INPUT®

BUILDING EXPERT SYSTEMS

KEY ISSUES

- **Support for Existing Environment**
 - **Exploit Productivity Gains**
-

WHAT IS AVAILABLE?

- **Language**
 - **Shells**
 - **Development Systems**
-

LANGUAGES

- **Not a Critical Issue**
- **Need Not Be Exposed**
- **Should be Part of Existing Environment**

SHELLS

- **Good Educational Tool**
 - **Present Inference Techniques
with Minimum Support**
-

DEVELOPMENT SYSTEMS

- **Supports Existing Environment**
 - **Access to External Data**
 - **Library Management**
 - **Multi-User Development**
 - **Extended Data Features**
 - **Output Control (Reports, Graphics)**
 - **Testing Support**
-

SUMMARY

THE STEPS

- **Education**
 - **Application Selection**
 - **Implementation**
 - **Evaluation**
-

**APPLICATION SELECTION
IS THE
MOST IMPORTANT STEP**

FOCUS ON VALUE

THE VALUE OF:

- **Development Productivity**
 - **Application Return**
-

CHOOSE PRODUCTS TO:

- **Support Existing Environment**
 - **Provide Productivity**
 - **Build Production Applications**
-

**Expert Systems Technology Is
an Evolutionary Step in
Improving Data Processing
Effectiveness and Value**

HARRY C. REINSTEIN
PRESIDENT
AION

Harry C. Reinstein, President of AION, was a senior staff member at the IBM Palo Alto Scientific Center, Palo Alto, California, prior to founding AION. In his 23 years at IBM, Mr. Reinstein held various management and development positions with operating system products, advanced programming technology, database systems and expert systems prototyping. He has a B.S. degree in math from Roosevelt University, and a M.S. degree in electrical engineering from Stanford University.

INPUT®

THE LOTUS TIME BOMB

**Dave Davison
President
IMEDIA**

**O.H. DAVISON
PRESIDENT
IMEDIA**

Dave is the Founder, Chairman and CEO of Imedia Corporation, formerly Iconix, a pioneering business graphics firm headquartered in Silicon Valley.

He is also an active investor and director of several startup information technology companies and a limited partner in several venture capital firms dedicated to funding early stage technology-based ventures.

Previously he was the founder of Data Copy, Inc., a San Francisco based computer services company which later became Zytron Corporation. Dave was Chairman and CEO of Zytron from 1971 until its merger into Dun and Bradstreet in 1979, and served as President of the Zytron Division of D&B until the formation of his current company in 1981.

He brings the perspective of over 35 years of management experience in computer, communications and image technology businesses to our conference today in his presentation entitled "The Lotus Time Bomb".

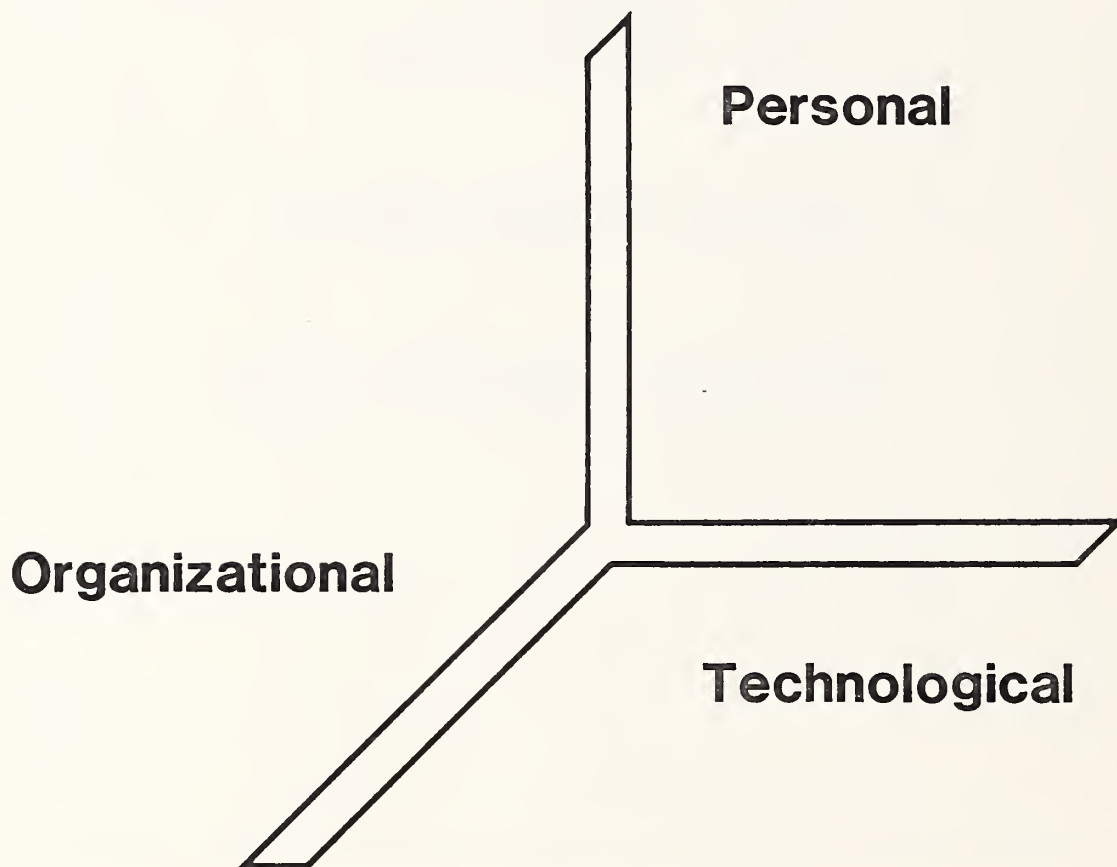
END-USER TRAINING: A PATH TO SUCCESS

Douglas H. Tayler
Consultant

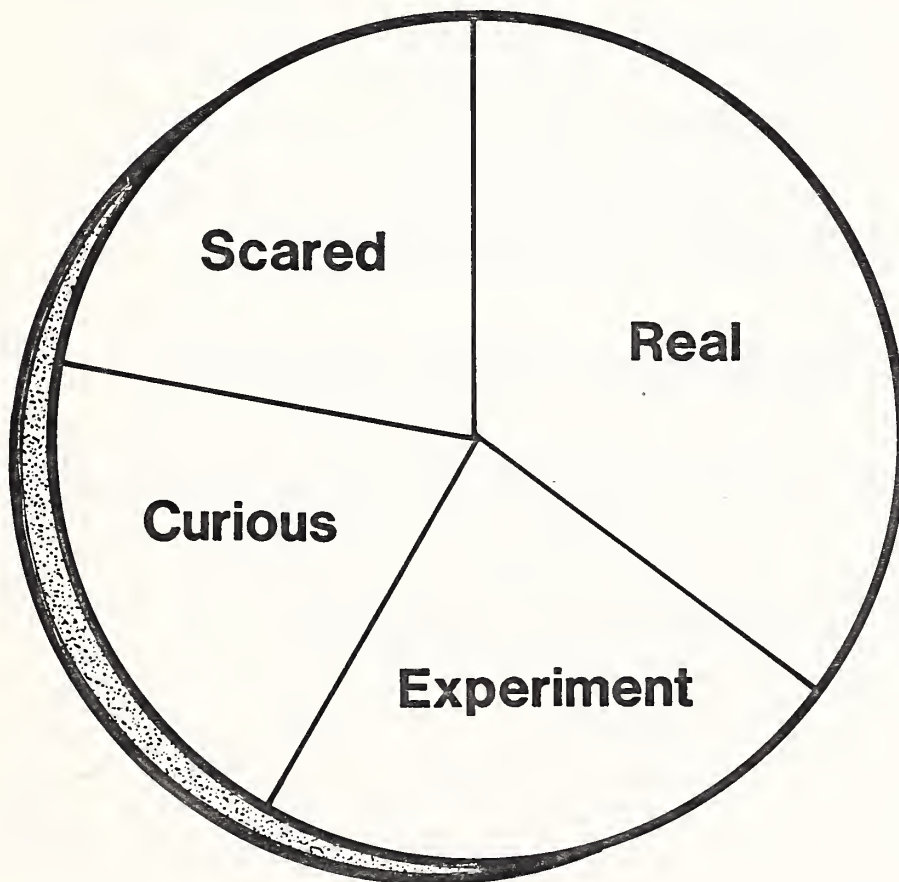
- **The Challenge**
 - **Ideas That Work**
 - **Future Challenges**
-

THE CHALLENGE

Dimensions



THE CHANGING END-USER POPULATION Today



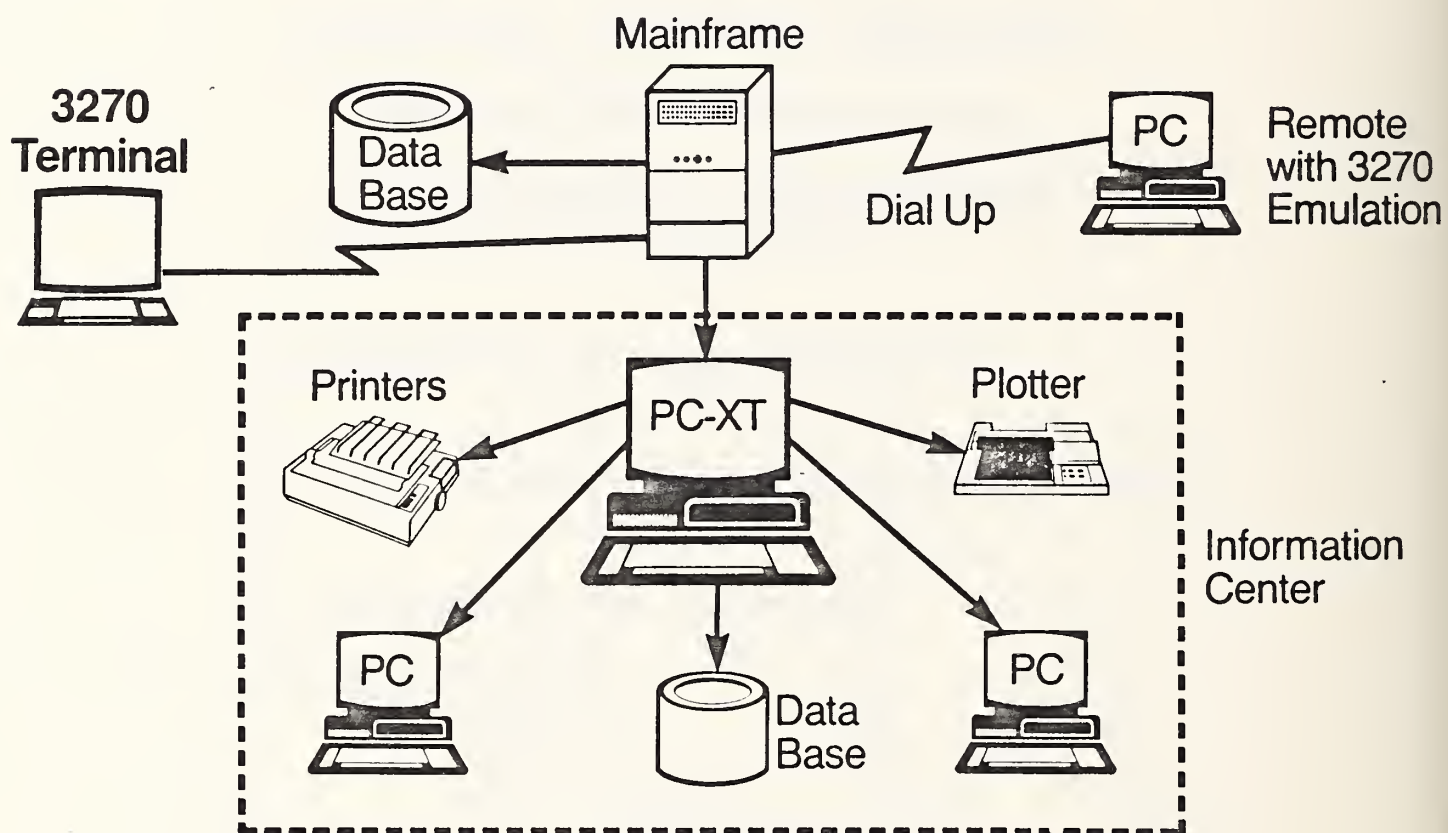
PERSONAL IMPLICATIONS

- **Clerk to Executive**
 - **Scared to Motivated**
 - **Illiterate to Semi Illiterate**
 - **Undisciplined to Semi Disciplined**
 - **Impatient to Tolerant**
-

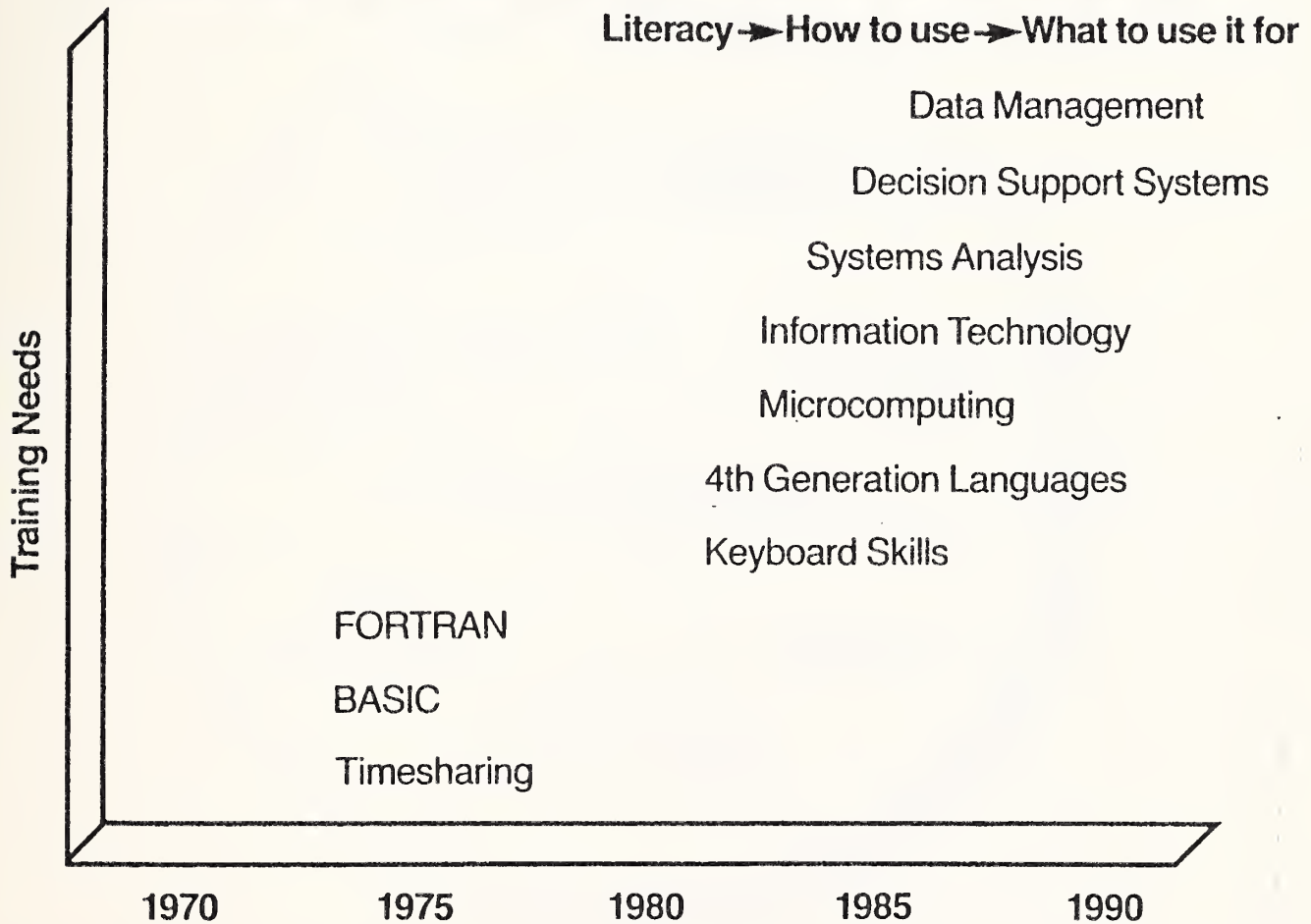
**Having trouble getting
personal with your
personal computer?**



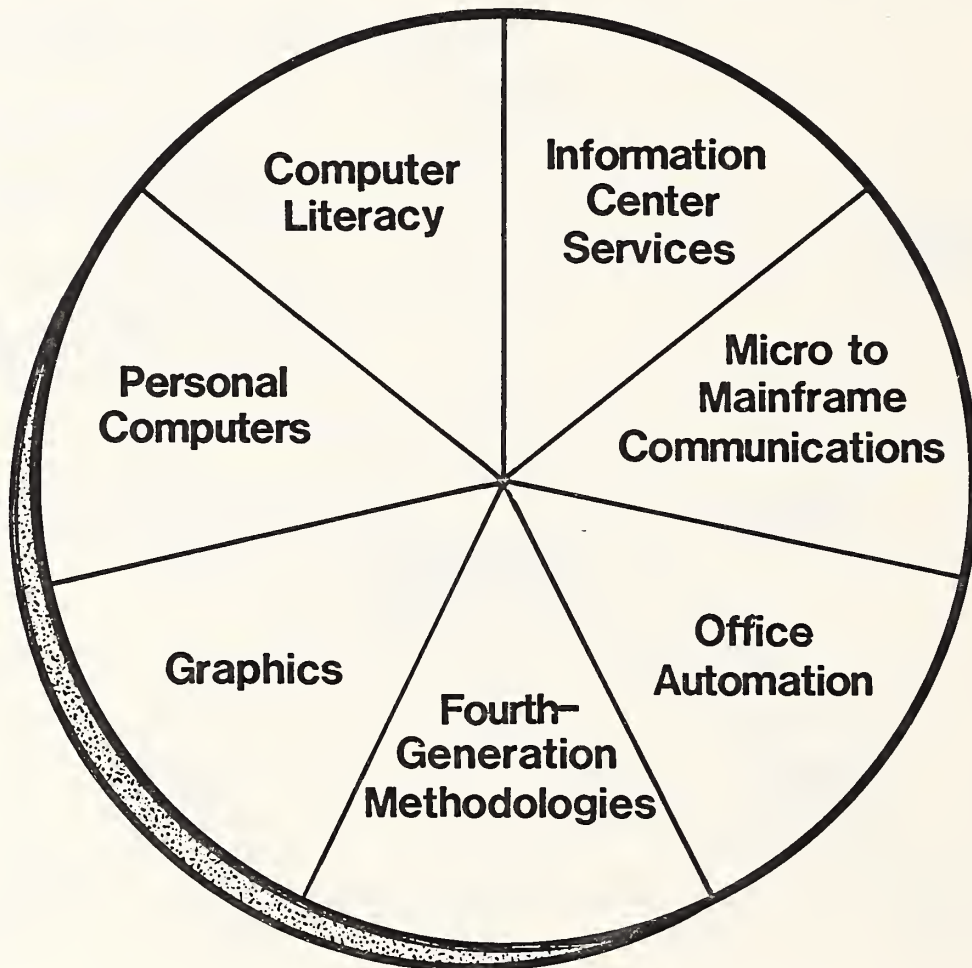
INFORMATION CENTER NETWORK



TECHNOLOGICAL IMPLICATIONS



TECHNOLOGICAL IMPLICATIONS



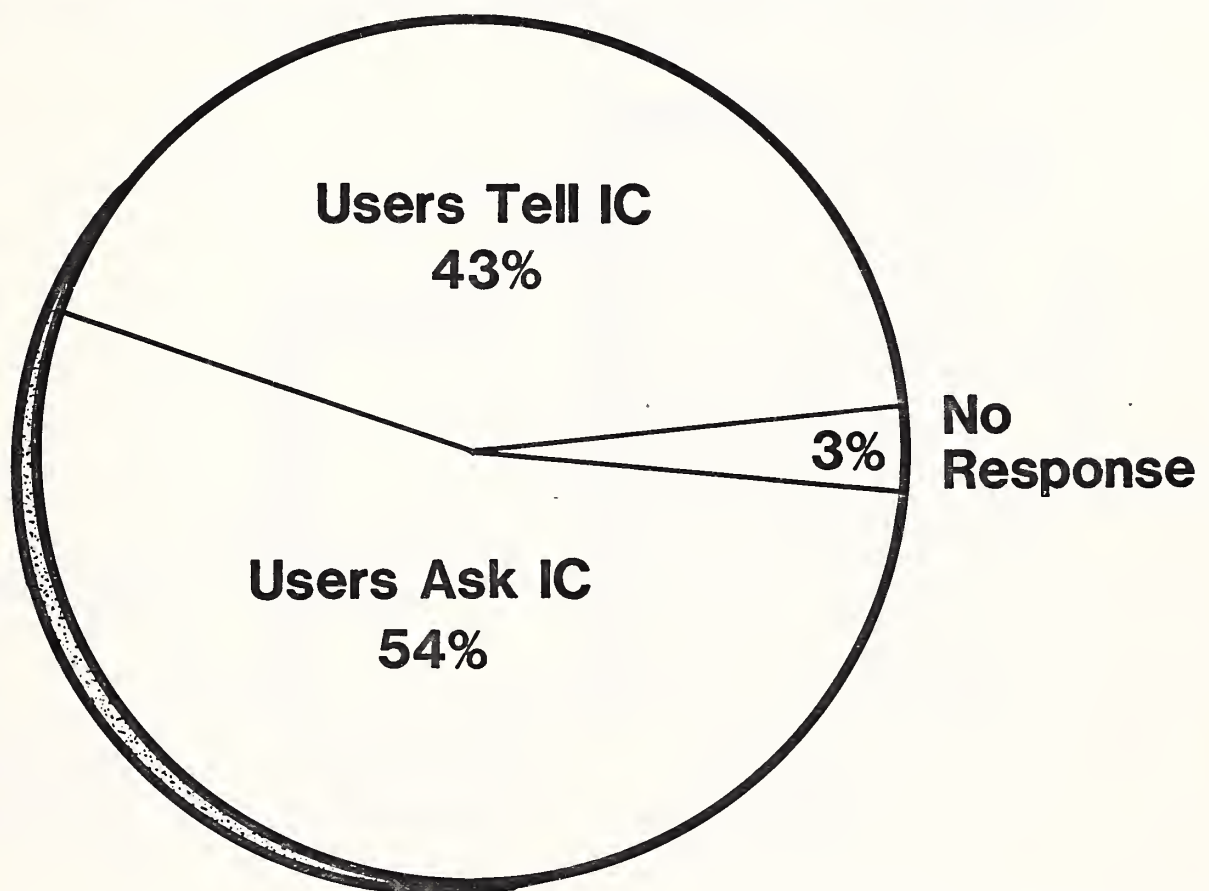
ORGANIZATIONAL IMPLICATIONS

- **Responsibility**
- **Budget**
- **Chargeback**

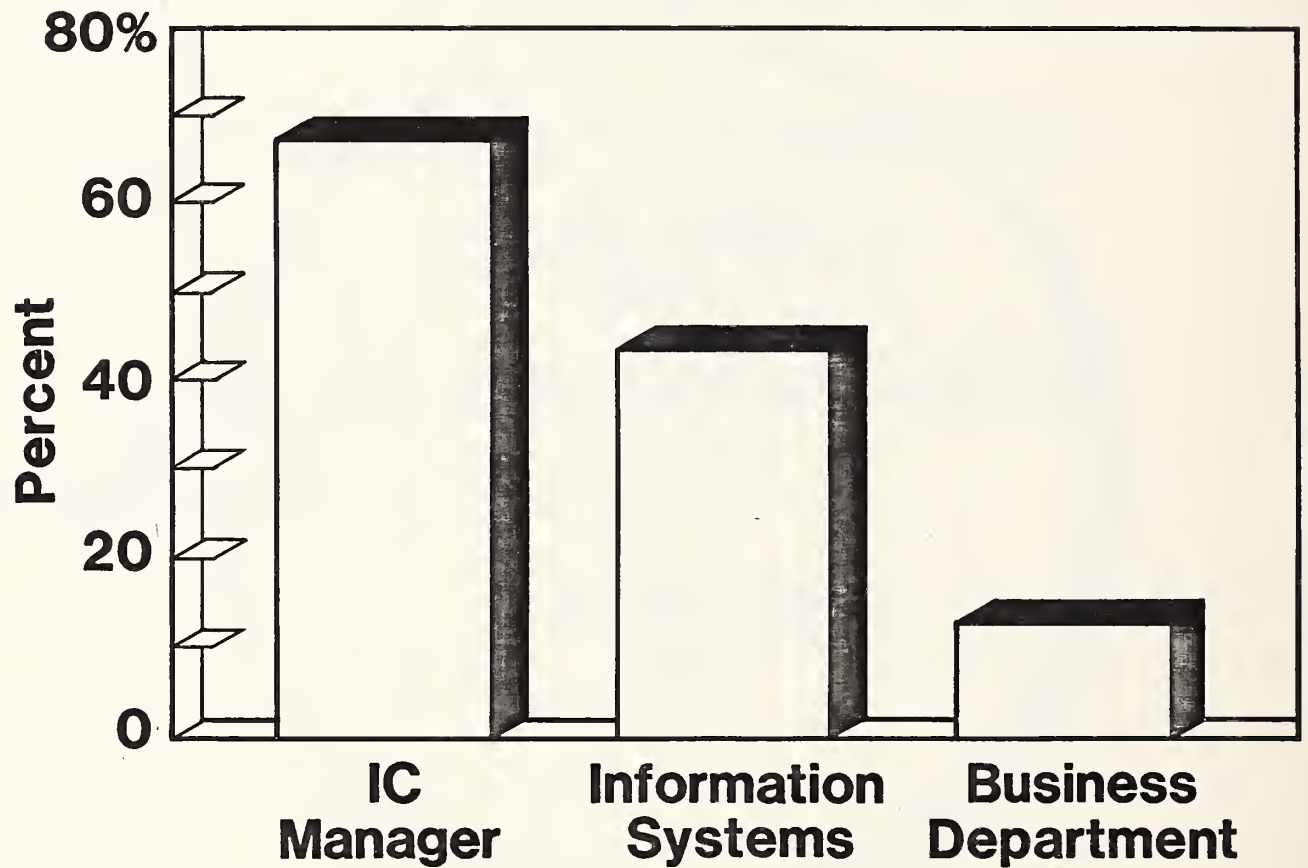
RESPONSIBILITY

**“Training is virtually the
‘raison d’etre’
of the Information Center”**

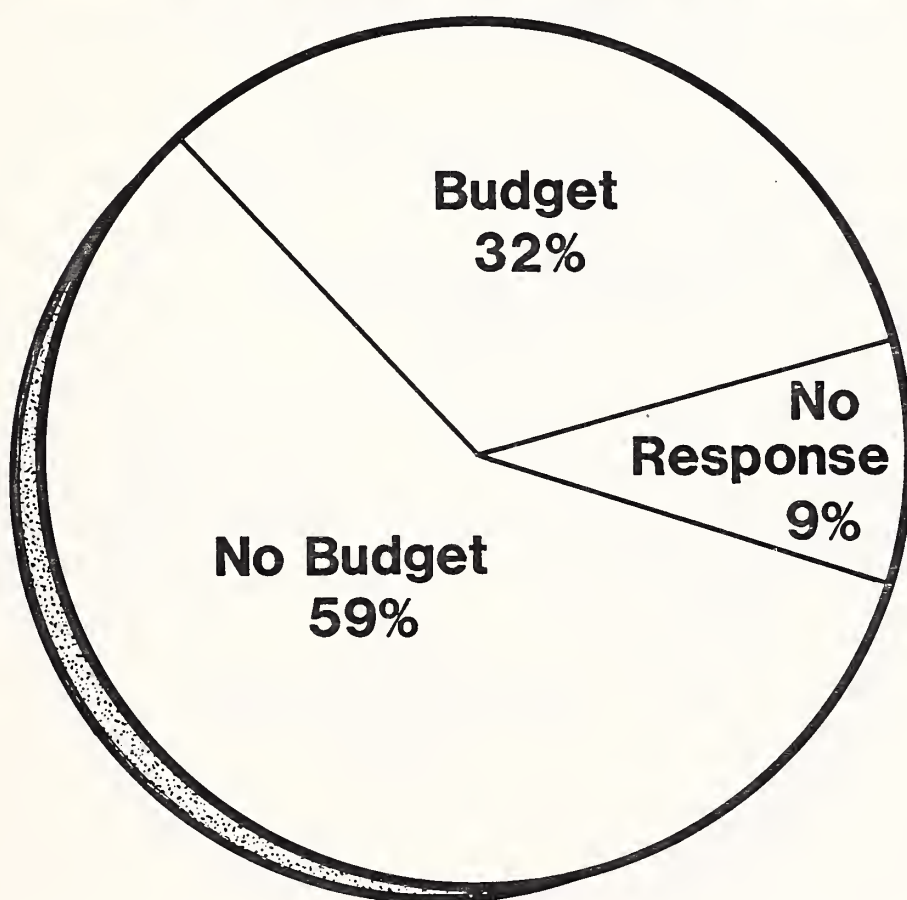
DETERMINING TRAINING NEEDS



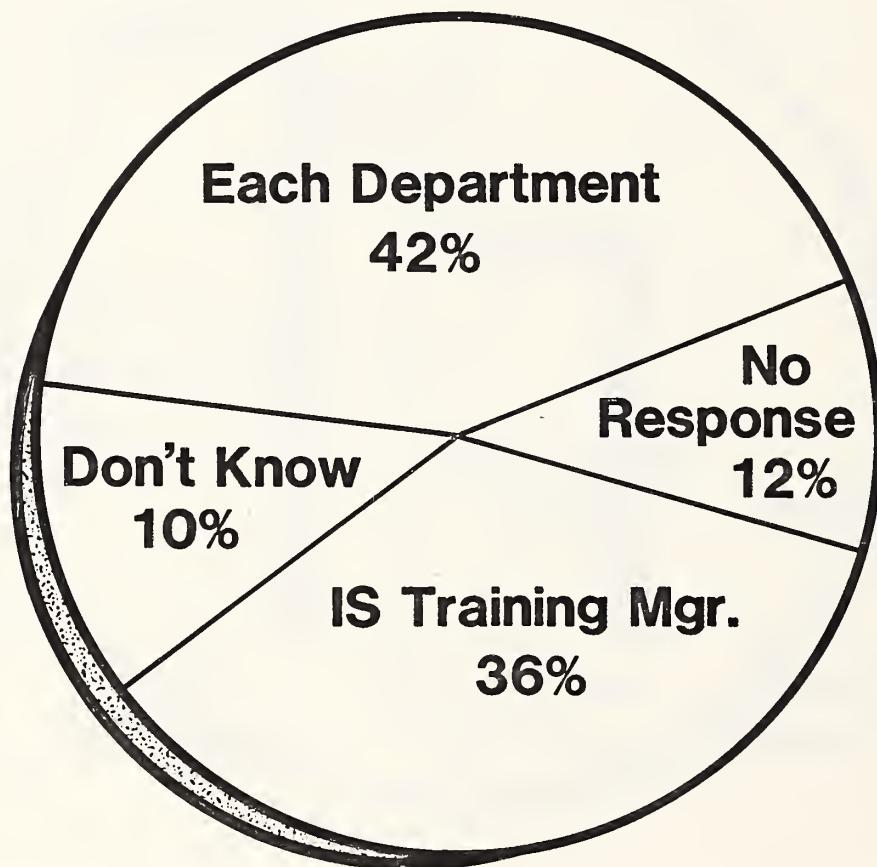
WHO CHOOSES THE VENDORS?



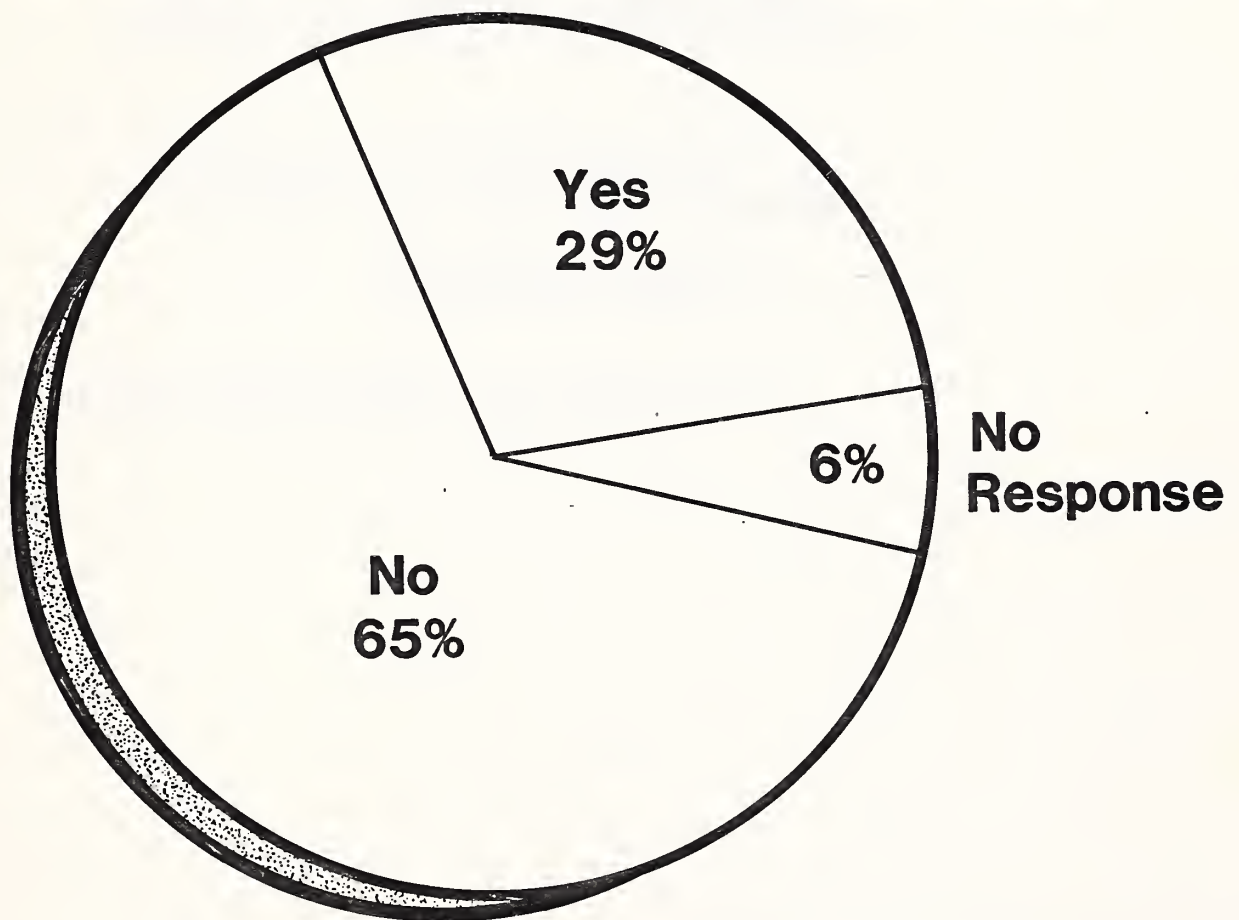
BUSINESS-USER TRAINING BUDGET



WHO CONTROLS THE BUDGET IF NOT THE IC?



CHARGE-BACK SYSTEM FOR TRAINING?



IDEAS THAT WORK

- **Planning Training**
 - **Marketing**
 - **Training Resources**
-

END USER TRAINING:
A Means to an End!!!

PLANNING TRAINING

- **Needs Analysis by Audience**
 - **Executive**
 - **Manager**
 - **Professional**
 - **Clerical**
-

PLANNING TRAINING

- **Prerequisites to Other Services**
- **Use of Outside Services**

MARKETING

- **User Groups**
 - **Newsletters**
 - **Library of Training Products**
 - **Ease of Use**
 - **Testing Motivation**
 - **Check Out System**
-

TRAINING RESOURCES

- **IC Staff**
- **Types of Training**
- **Training Selection**

IC STAFF

- **Preserve Their Time**
 - **Don't Reinvent the Wheel**
 - **Train the Staff**
 - **Multiple Products**
 - **Business Skills**
 - **Training Skills**
 - **Communications Skills**
-

TYPES OF TRAINING

- **CBT**
 - **On Demand Training**
 - **Prerequisite to Classroom**
 - **Package with the PC**

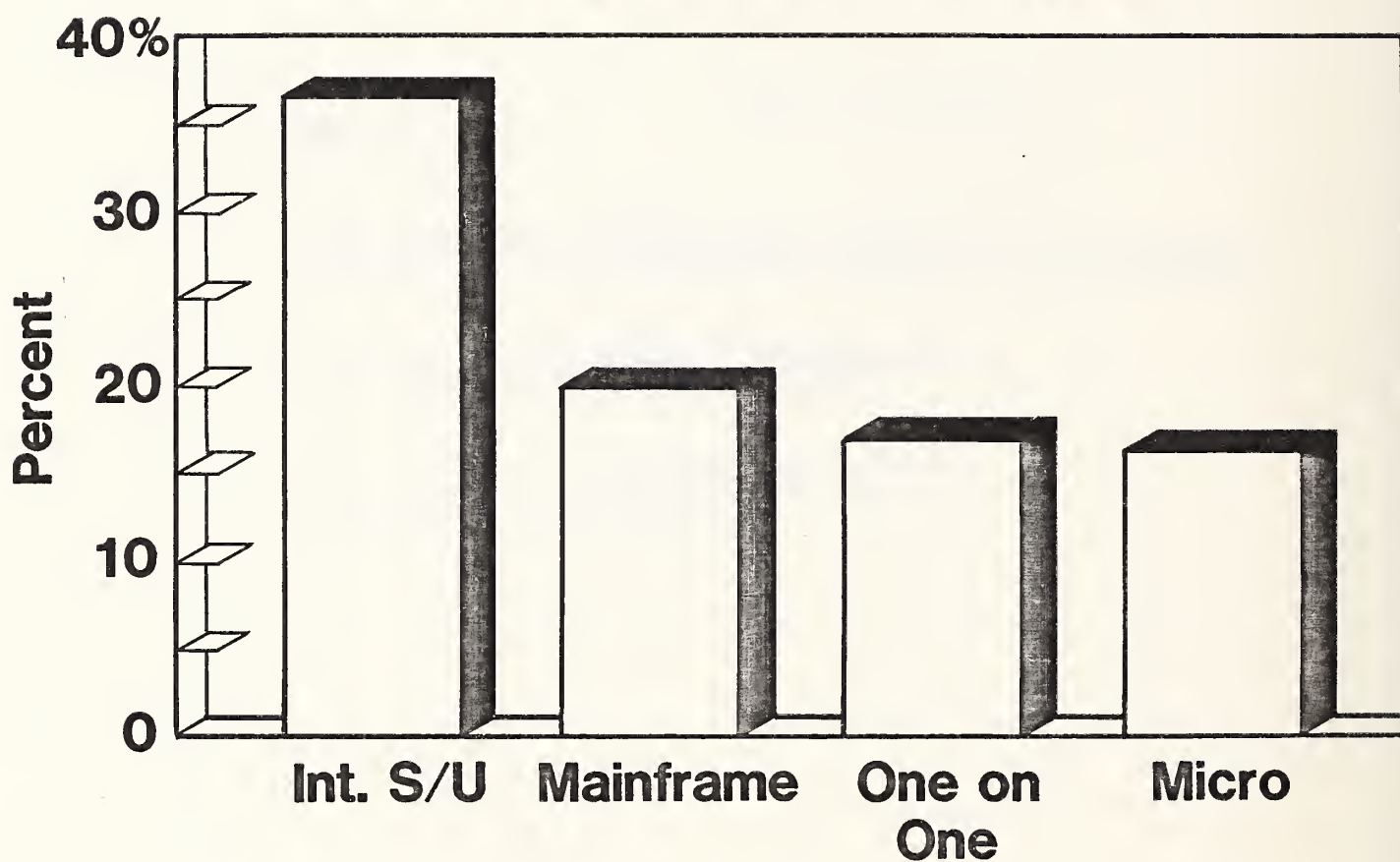
TYPES OF TRAINING

- **Multimedia**
 - **Self Paced, Builds Training Discipline**
 - **Enhances Classroom**
 - **Ease of Access**
-

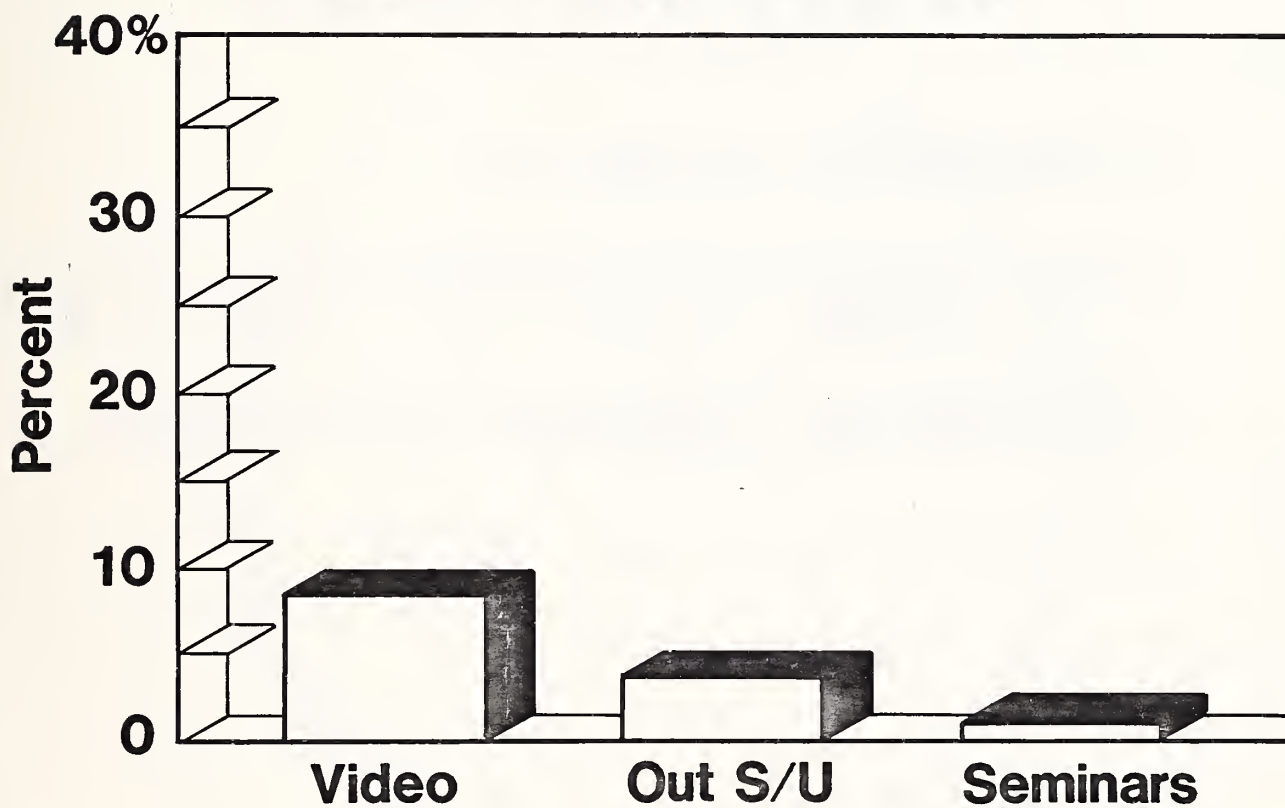
TYPES OF TRAINING

- **Classroom**
 - **Integrate Media Products**
 - **Problem Oriented**
 - **Test by Doing**

PREFERENCE OF METHODS FOR BUSINESS-USER TRAINING



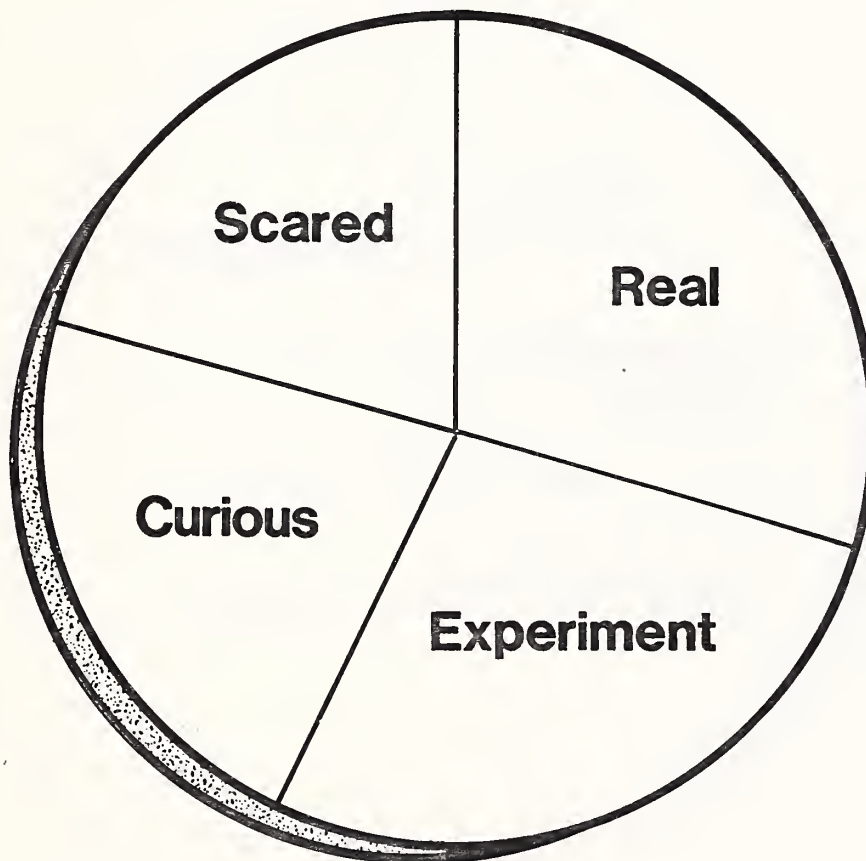
PREFERENCE OF METHODS FOR BUSINESS-USER TRAINING



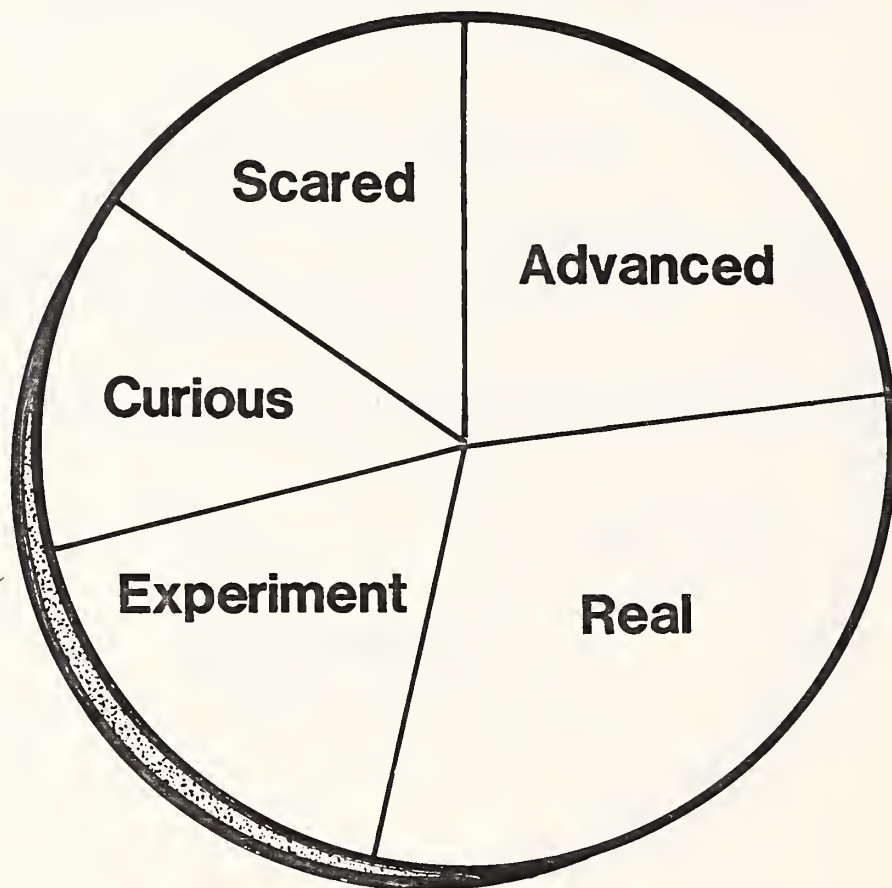
FUTURE CHALLENGES

- **Changing Audience**
 - **Changing Computing Technology**
 - **Changing Training Technology**
-

THE CHANGING END-USER POPULATION Today



THE CHANGING END-USER POPULATION Tomorrow



CHANGING COMPUTING TECHNOLOGY

- **Networks**
 - **Office Automation**
 - **User Built Applications**
 - **Improving Ease of Use**
 - **Information Retrieval**
-

CHANGING TRAINING TECHNOLOGY

- **CBT**
 - **Videodisk**
 - **Videotext**
 - **Video Networks**
-

**Tomorrow's DP Professional
Is
Today's End User ! ! !**

INPUT®

**NEW DIRECTIONS
IN SOFTWARE PRODUCTS**

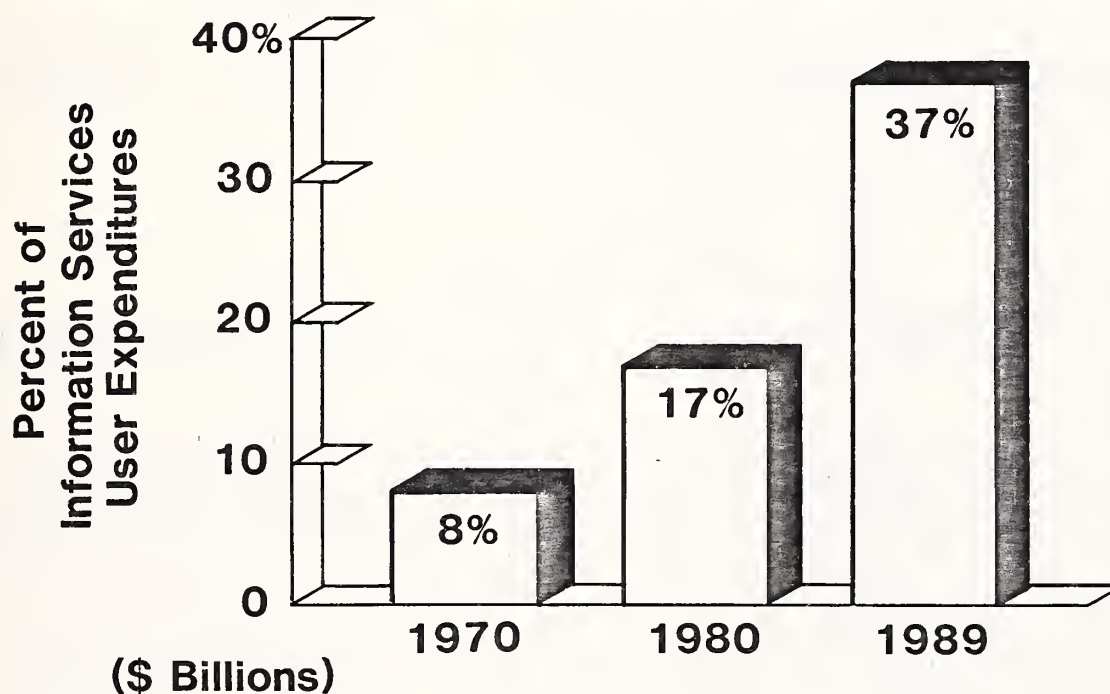
**Jack Keen
Principal Consultant
INPUT**

AGENDA

- **Introduction**
 - **Marketplace Changes**
 - **Opportunities and Caveats**
 - **Recommendations**
-

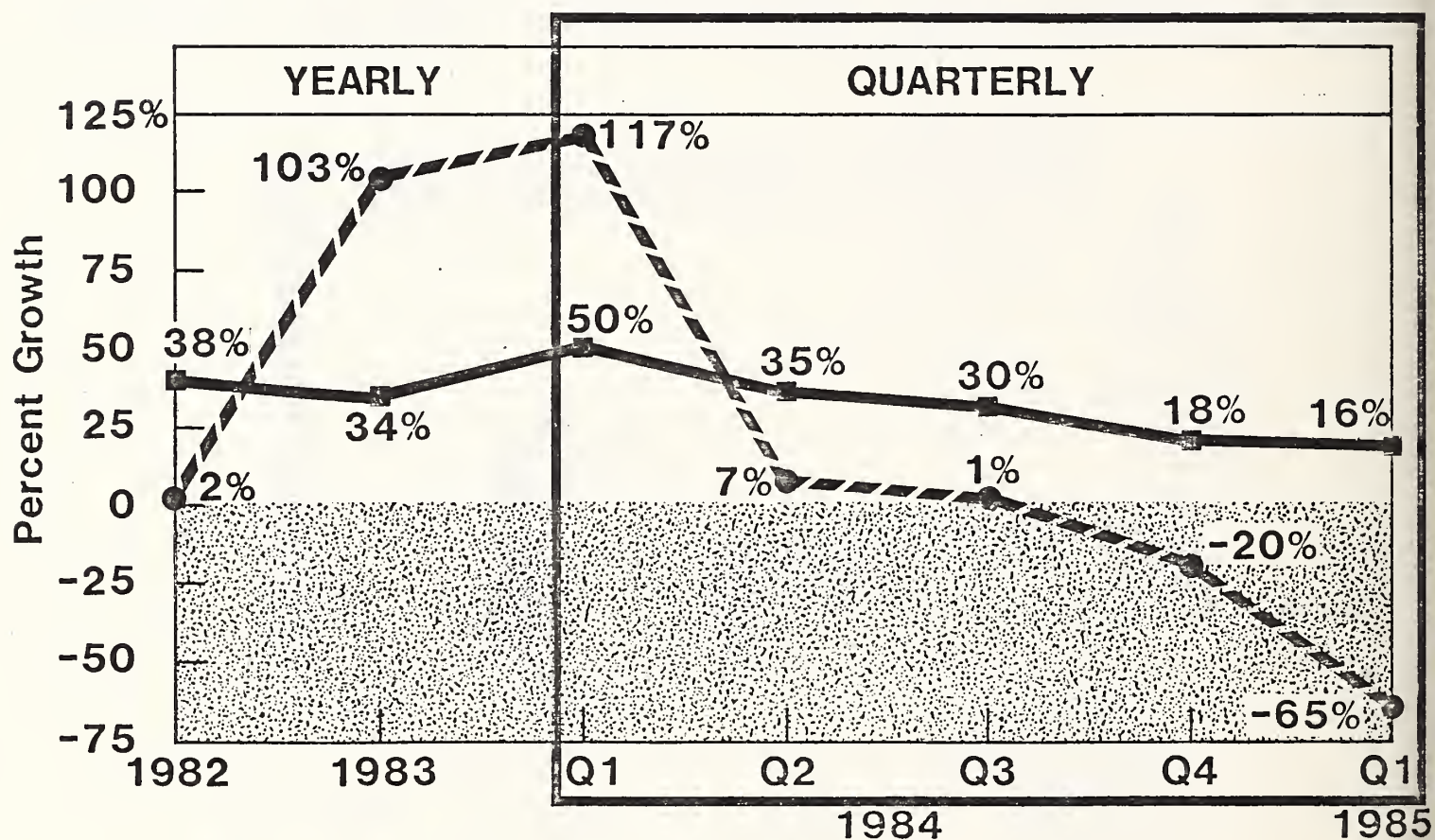
INTRODUCTION

SOFTWARE PRODUCTS PORTION OF INFORMATION SERVICES (1970-1989)



Software Products	\$0.3	\$2.9	\$40.0
Total Information Services	\$3.2	\$17.0	\$107.5

PUBLIC SOFTWARE PRODUCTS VENDORS

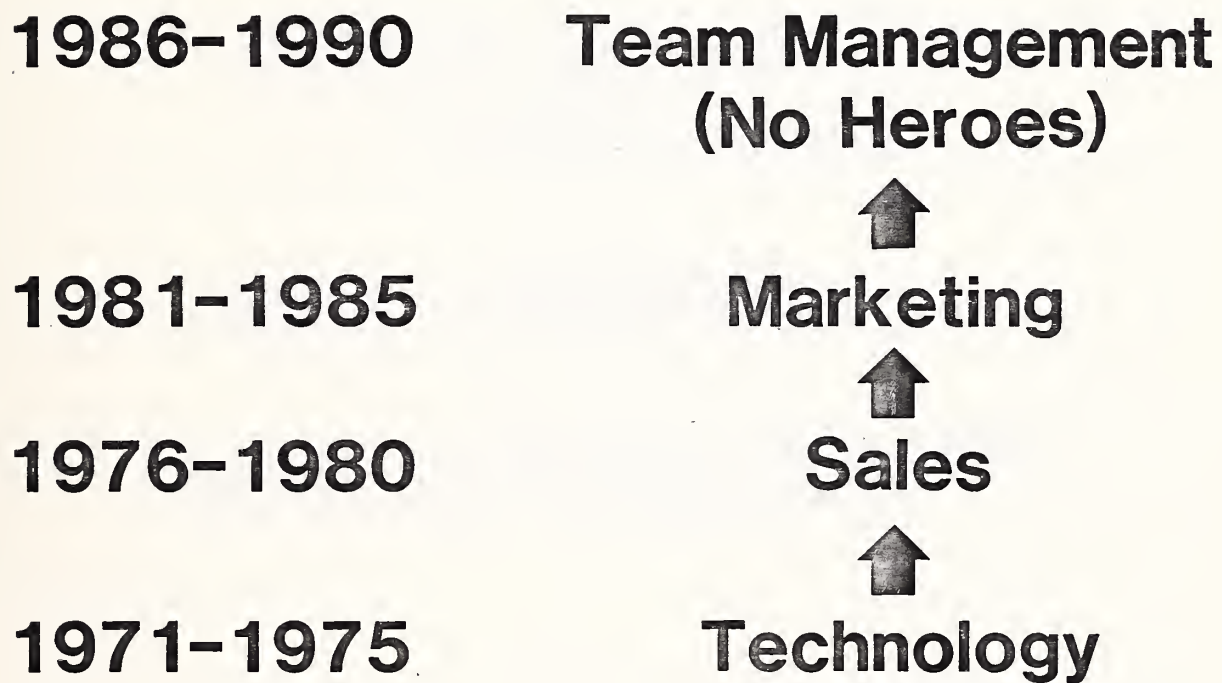


Revenue 

Income 

Last Update: 07-01-85

TEAMWORK



MARKETPLACE DANGERS

- **Undetected Product Obsolescence**
 - **Overambitious Goals**
 - **Inadequate Resources**
-

MARKETPLACE CHANGES

 **Buyers**

Systems

Market Strategy

BUYING PROCESS CHANGING

- **Involves**
 - **Users**
 - **IS Management**
 - **Finance**
 - **Corporate Management**
 - **More Specialists**
-

BUYING DECISION SLOWING DOWN

LAW 1

**Rate of Supply >
Rate of Absorption**

LAW 2

**Rate of Change <
Length of Decision Process**

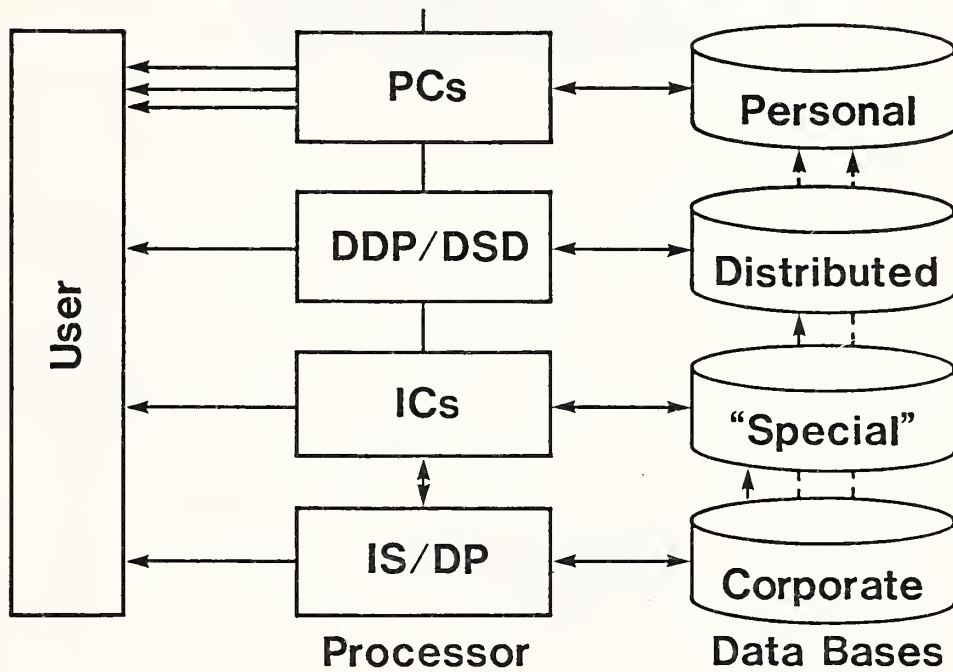
MARKETPLACE CHANGES

Buyers

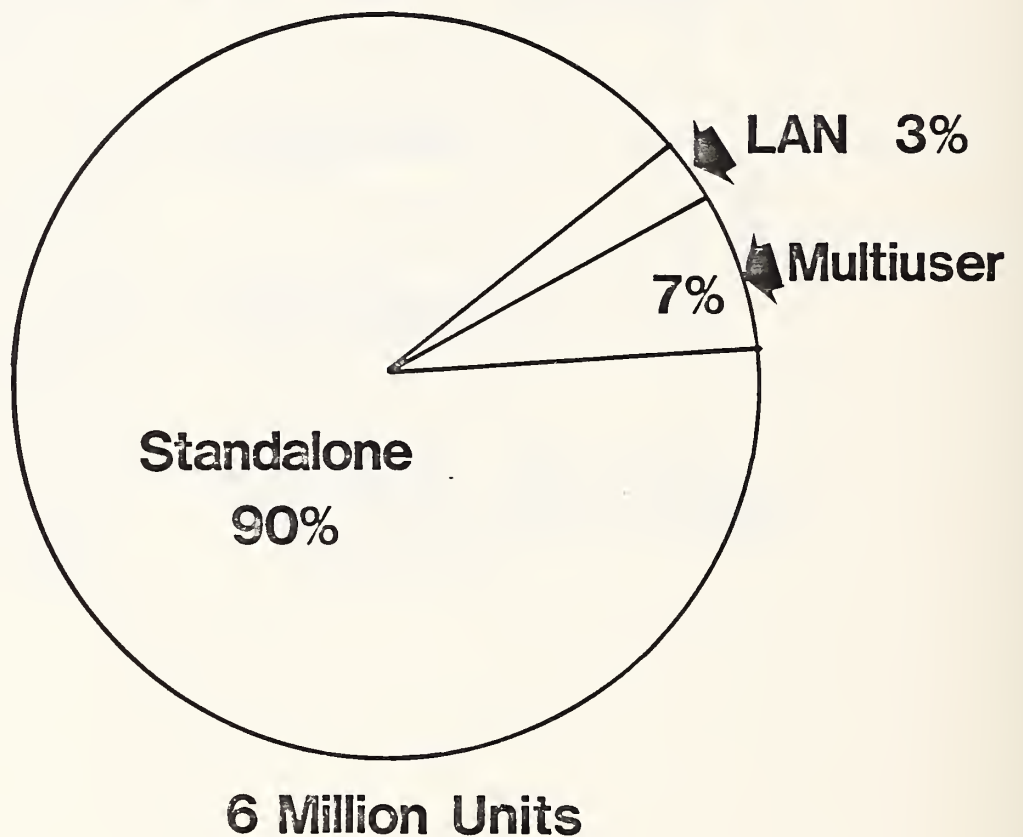
 **Systems**

Market Strategy

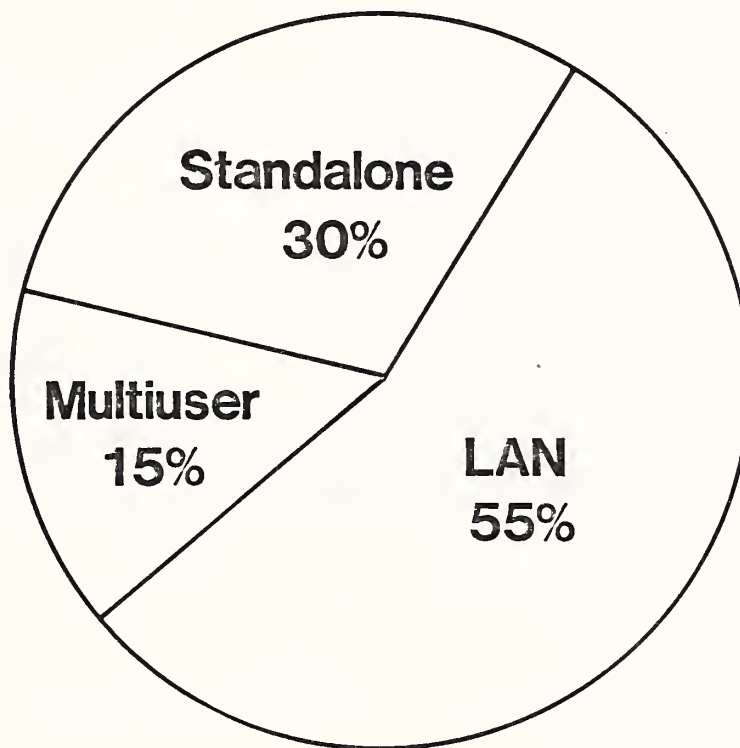
COMPLEXITY IN DSD



1984 MICRO INSTALLED BASE IN BUSINESS

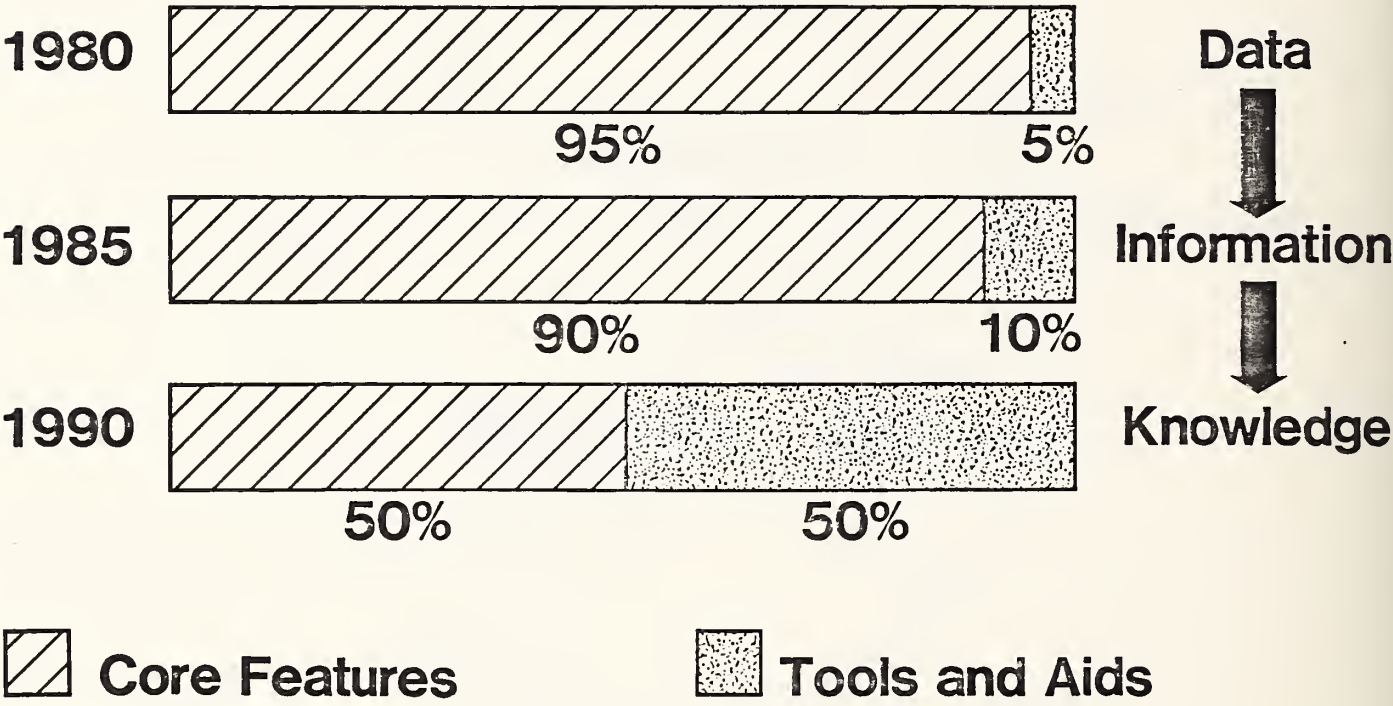


1990 MICRO INSTALLED BASE IN BUSINESS



20 Million Units

APPLICATION SOFTWARE PRODUCT COMPONENT EVOLUTION



MARKETPLACE CHANGES

Buyers

Systems

 **Market Strategy**

SOFTWARE PRICING TRENDS

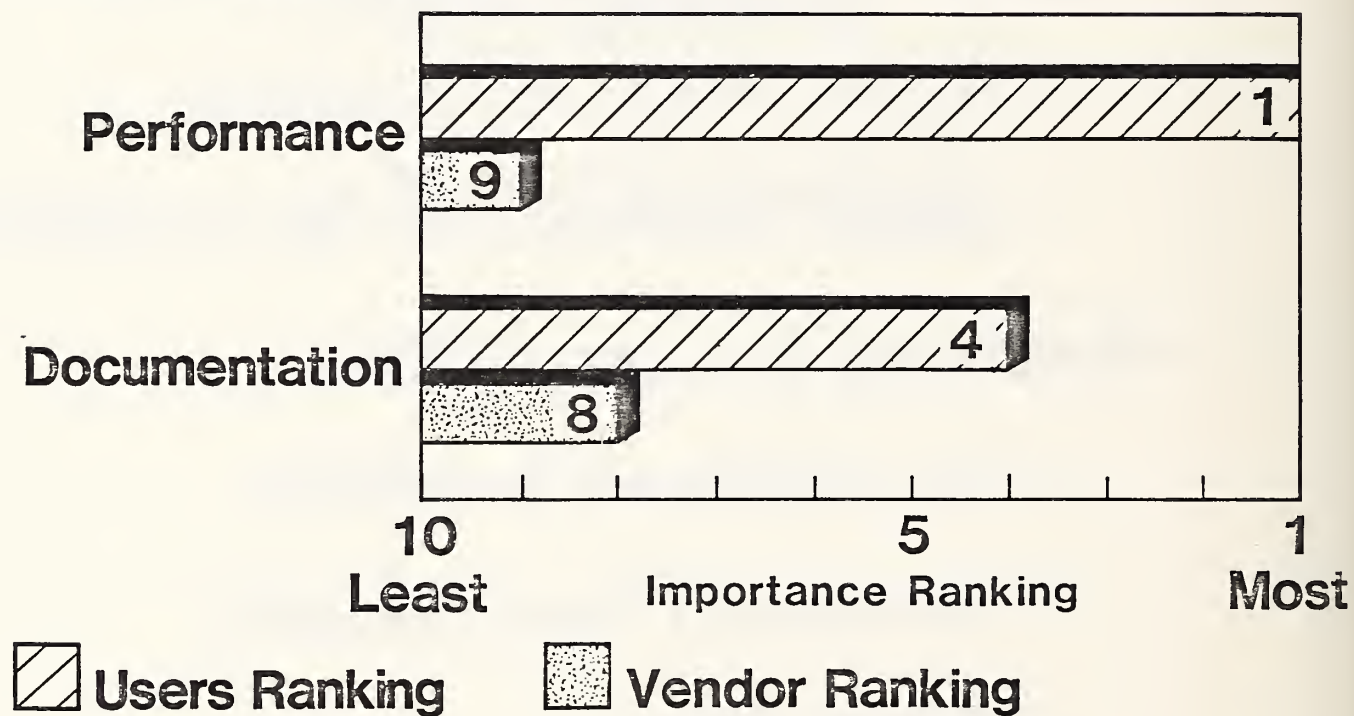
- **More Bundling**
 - **More Discounting**
-

PRICE TRENDS

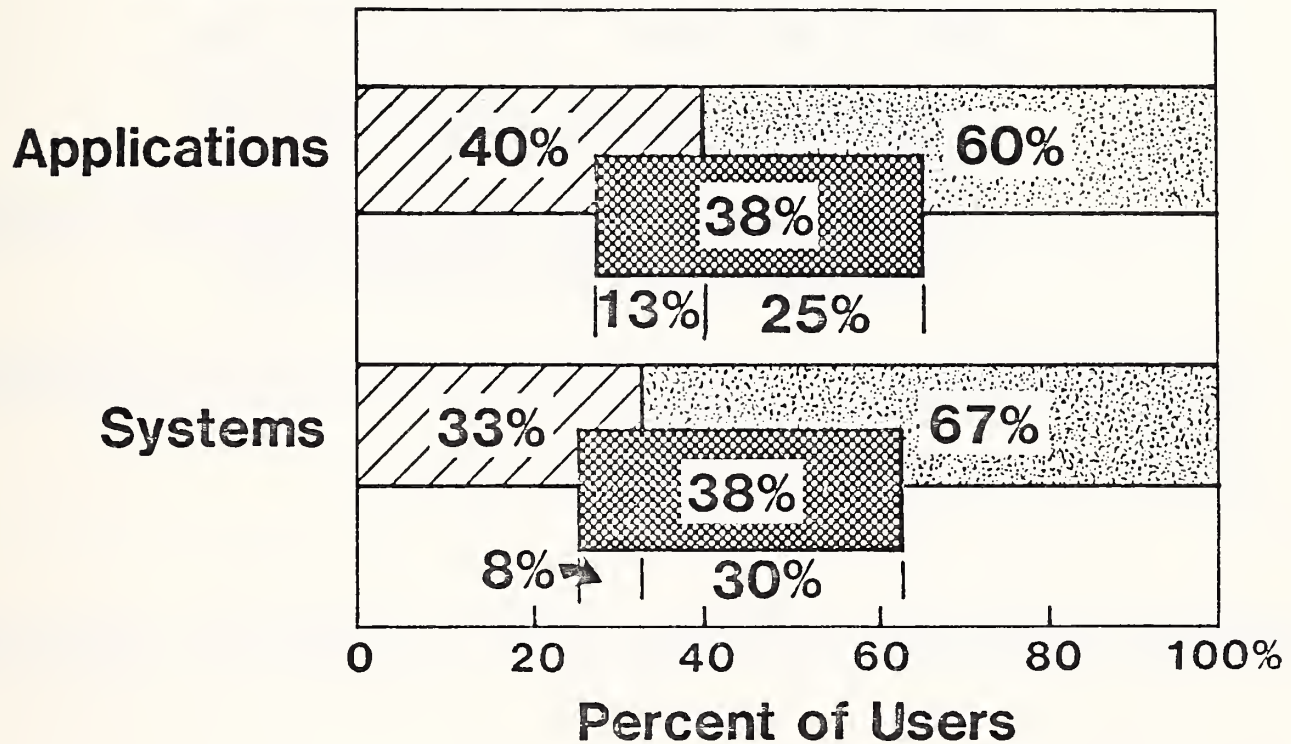
- **Lower Increases in 1985**
 - **Some Price Reductions**
 - **Rapid Decline for Old Products**
 - **Increase in Late 1980s**
 - **For Updated Products**
 - **Increased Functionality**
 - **Integration**
-




VENDORS MISPERCEIVING USER ATTITUDES

Vendor Underrating



USER ATTITUDES TO PRICING



-  Prices are too high.
-  Prices are just right.
-  Would pay more for better support.

OPPORTUNITIES AND CAVEATS

PROFILE OF THE FUTURE

User Focus: Strategic Systems

**Architecture: Distributed, Applications/
Systems Software Links**

Buying Criteria: Integration, Performance

PROFILE OF THE FUTURE

Product Line: Focused, Reinforcing

Channels:

- Information Systems Department**
- Other Vendors**

OPPORTUNITIES

- **Multi-System, Multi-Vendor Solutions**
 - **Vertical Versions of Cross-Industry Products**
 - **DSD Tools and AIDS**
 - **Brand Name Loyalty**
-

IBM IS VULNERABLE IN SOFTWARE PRODUCTS

- **Distractions Due to Multiple Hardware/Communications Opportunities**
 - **Lacks Software Entrepreneurial Focus**
 - **Organizational Rivalries**
-

RECOMMENDATIONS

SLIPPERY MARKETPLACE

- **Rampant Technology Changes**
 - **Better Funded Competition**
 - **More Complex Product Requirements**
-

KEYS TO SUCCESS

- **Integrated Product Offerings**
 - **Higher Level Product Design Decisions**
 - **Expanded Customer Education and Training**
-

KEYS TO SUCCESS

- **Extended Planning Horizon**
 - **Cut Marginal Products,
Businesses**
 - **Be The Right Size**
-

NEED FOR TEAM MANAGEMENT

- **To Stay Abreast of Marketplace Changes**
 - **All Functions Vital**
 - Sales
 - Marketing
 - Support
 - Product Development
 - Finance & Administrative
-

WHAT MAKES GOOD TEAM MANAGEMENT?

- **Management Depth in All Departments**
 - **Non-Autocratic Leadership**
 - **Focus on Continuous Education**
 - **Strong Internal Support Systems**
-

INPUT®

SUMMARY

NEW DIRECTIONS FOR SOFTWARE PRODUCTS

- **Current Successes Are Temporary**
 - **Expect Continuous Market Surprises**
 - **Prepare for More Complex Buying Processes**
-

NEW DIRECTIONS FOR SOFTWARE PRODUCTS

- **Include More Applications/Systems
Software Integration**
 - **Explore New Distribution Channels**
 - **Use Team Management for Needed
Balance**
-

JACK M. KEEN
PRINCIPAL CONSULTANT

Jack M. Keen is a Principal Consultant with INPUT. His 17 years of experience in the computer industry include general management, sales management, and marketing positions with University Computing Company. Mr. Keen has provided business and market strategy consulting and extensive executive training to a wide variety of organizations. Mr. Keen holds a B.S. from Stanford University and an M.B.A. from Harvard.

**UNIVERSAL INFORMATION SERVICES:
THE FUTURE OF
INFORMATION NETWORKS**

**Arnold Heiber
Market Manager of
Advanced Network Planning and Strategy
AT&T Technologies -
Network Systems**

UNIVERSAL INFORMATION SERVICES

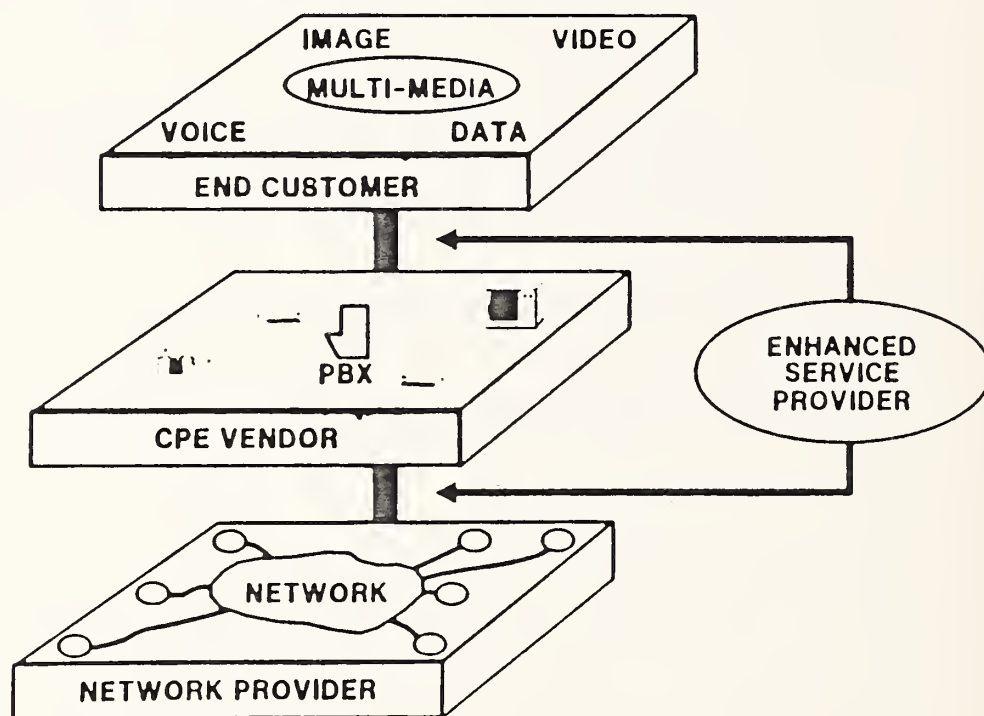
Goal:

Provide network providers everywhere with the capability to give any customer any kind of voice, data, or image service

- **In any combination**
- **In any place**
- **At any time**

With a maximum of convenience and economy

INFORMATION MOVEMENT AND MANAGEMENT Market Motivation



MARKET MOTIVATION

| | |---------------| | End Customers | |---------------|

- Information productivity vs information proliferation
- Services on demand
- Customer programmability and control
- Cost effective solutions

MARKET MOTIVATION

CPE Vendors

- **Optimize equipment price/performance**
- **Integration of voice/data/image applications**
- **Flexibility to meet customer's changing needs rapidly**

MARKET MOTIVATION

Network Providers

- **Maintain account control**
- **Improve network revenue-to-cost ratio**
 - **Transport efficiency**
 - **General-purpose networks**
 - **Responsive service provisioning**
 - **Maximum service potential**
 - **Customer programmability and control**
- **Develop new markets**

MARKET MOTIVATION

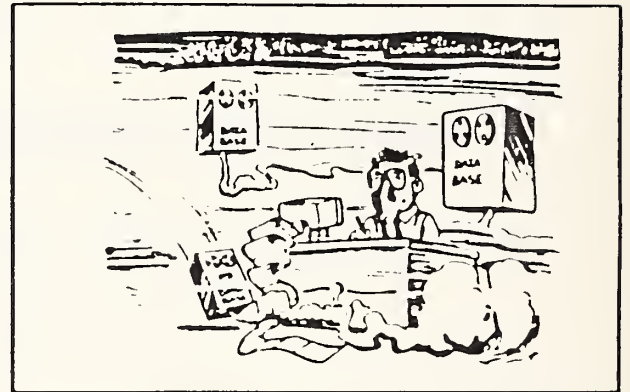
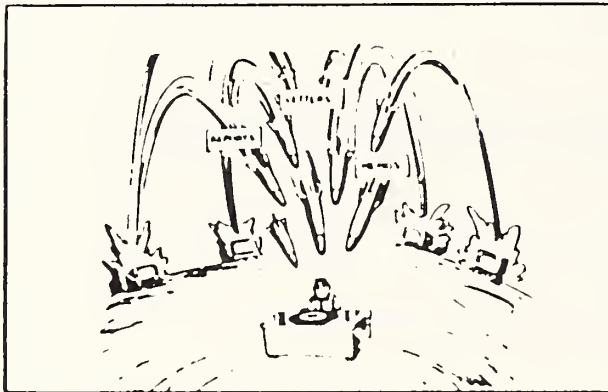
Enhanced Service Providers

- **Easy access to services**
- **More customer utility for services through improved economics**
- **Greater flexibility for introducing new enhanced services**

**INFORMATION PROLIFERATION
OR
INFORMATION PRODUCTIVITY?**

**Information productivity
Is the key**

WARNING: THE INFORMATION AGE CAN BE HAZARDOUS TO YOUR HEALTH



AS A MATTER OF FACT...

**The information base in America's Businesses
is doubling every five years**

- 400 billion documents currently in storage**
- 72 billion documents added annually**

INFORMATION PRODUCTIVITY

New Emphasis: Integrated Voice-Image

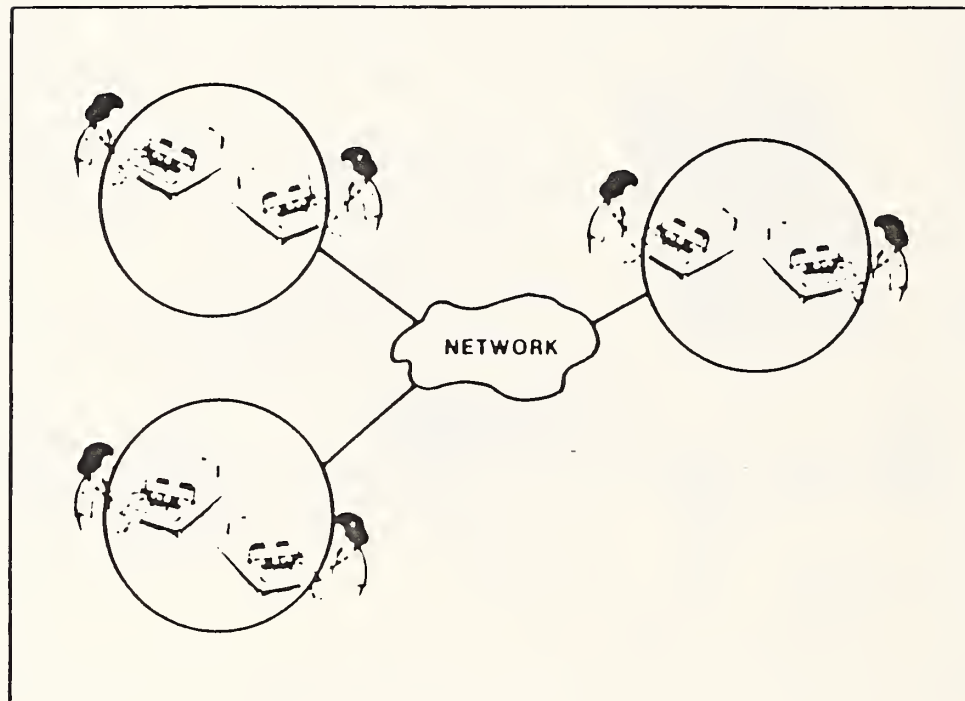
Information productivity requires:

- 1. Image . . which requires bandwidth**
- 2. Rapid acquisition . . which requires rapid access and wideband transfer**
- 3. Multi-media applications . . which requires integration**

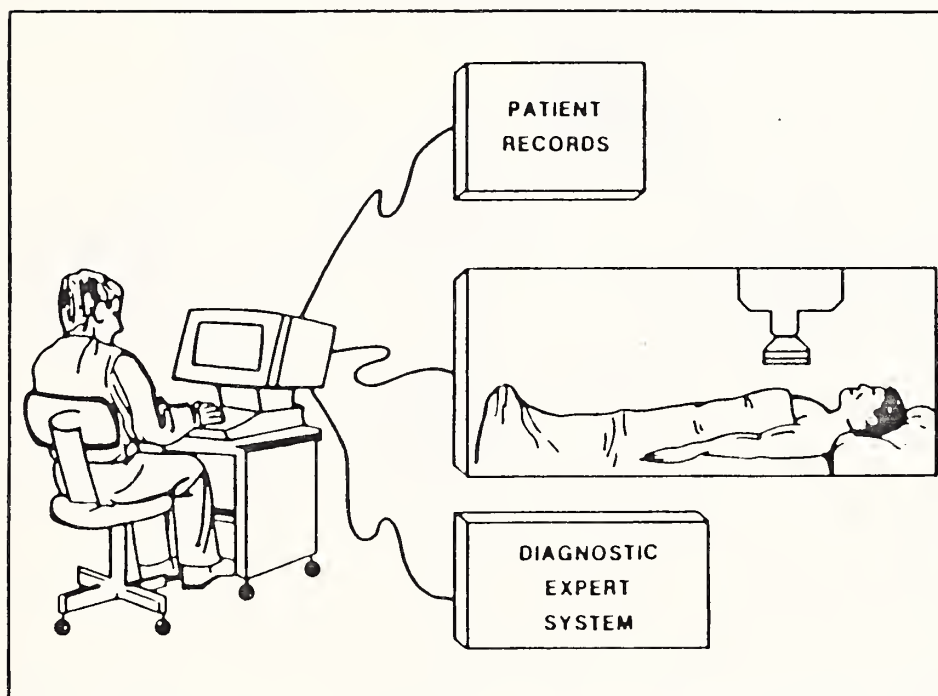
MULTI-MEDIA, ELECTRONIC MAIL



MULTI-MEDIA, DYNAMICALLY BRIDGED TELECONFERENCE

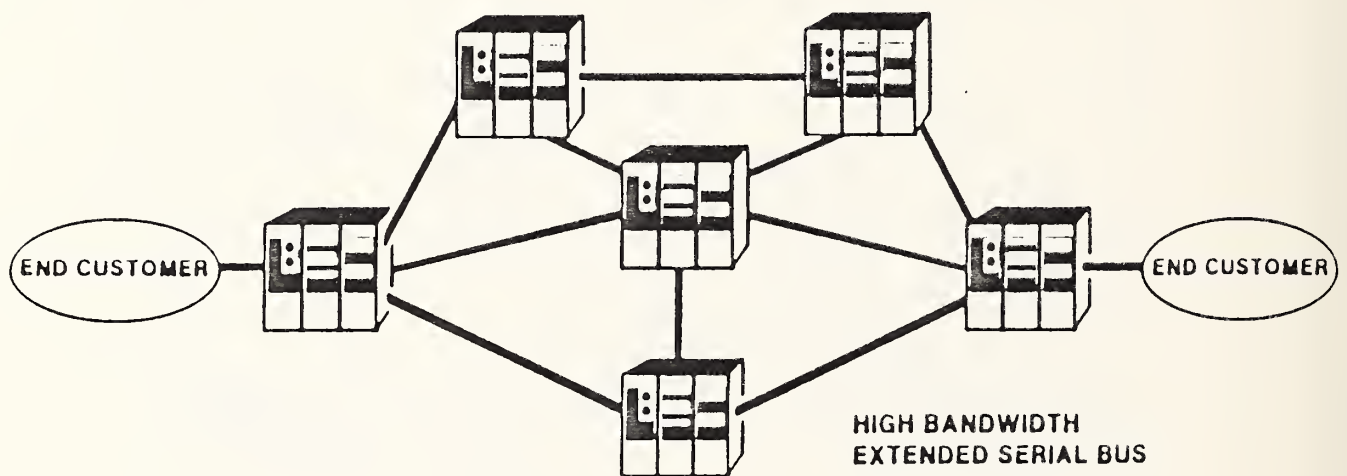


MULTI-MEDIA, REMOTE MEDICAL DIAGNOSIS...



UNIVERSAL INFORMATION SERVICES

The Network Of The Future Is A Distributed Computer For Multi-Media Applications



UNIVERSAL INFORMATION SERVICES

Key Elements

- Adaptive logically provided services
- Universal port
- Integration
- Architectural freedom
- Access bandwidth
- Wideband packet transport
- Transport efficiency
- Virtual private networks

ADAPTIVE LOGICALLY PROVIDED SERVICES

- Services on demand
- Adaptive to need
- Dynamic network resource allocation
(bandwidth, switching, bridging, feature processing, storage)

End customers	CPE vendors	Network providers
- Breadth of services	- Breadth of sevices	- Automatic service provisioning
- No delay	- New products	- Reduced cost & delay
- Satisfaction	- Rapid introduction	- Revenue growth

UNIVERSAL PORT

- Uniform access standards
- Portability
- Interchangeability

End customers

CPE vendors

Network providers

- Ease of access

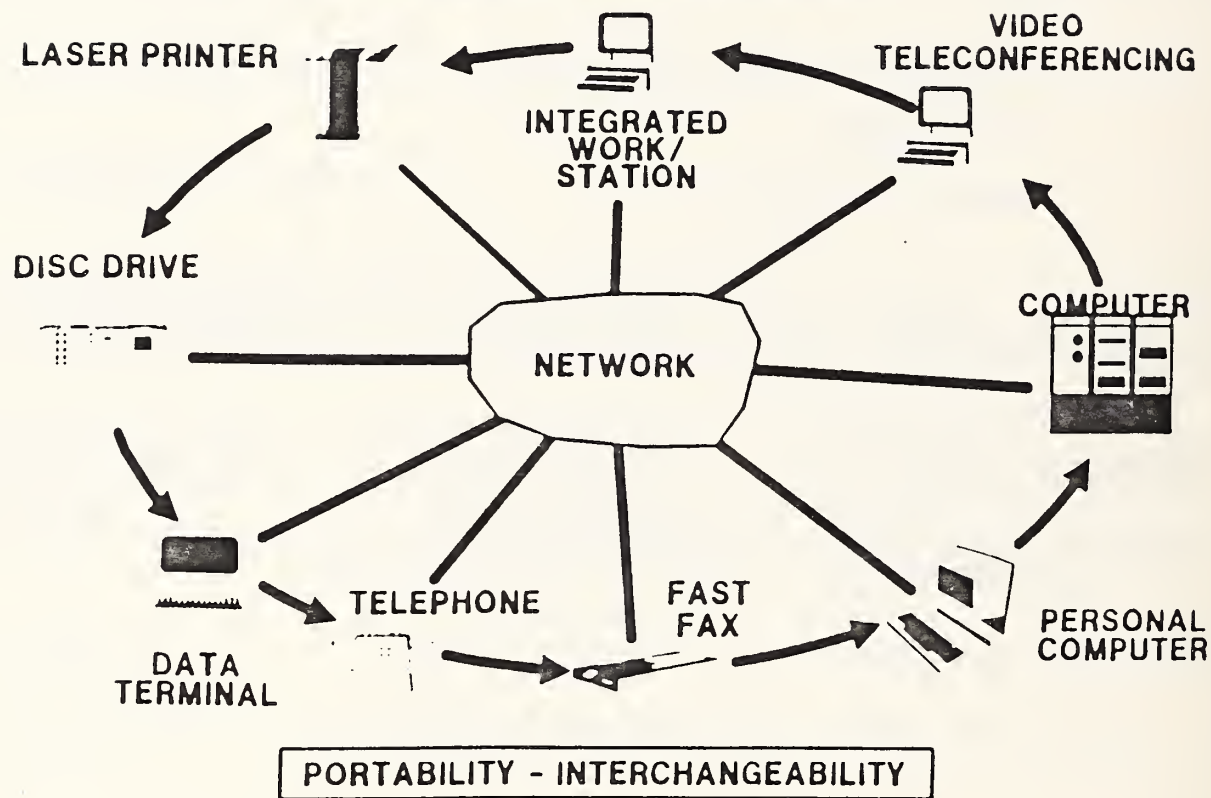
- Uniform access

- Growth of usage

- Ease of movement

- Economies of scale

UNIVERSAL PORT



INTEGRATION

- Integrated access and transport
- Integrated protocol
- Integrated operating systems
- Integrated operations systems

End customers	CPE vendors	Network providers
<ul style="list-style-type: none">- Cost- Programmability	<ul style="list-style-type: none">- Programmability	<ul style="list-style-type: none">- Programmability- Network cost- Cost of operations- Flexibility- Services, applications, revenues

ARCHITECTURAL FREEDOM

- Minimum cross network delay
- Wideband transfer
- Eliminate the effects of distance

End customers
CPE vendors
Network providers

- Centralization or distribution of functions
- New configuration alternatives
- Improved system price/performance
- New software structures

ACCESS BANDWIDTH

- Information transfer
- Range of terminals, applications
- Cost/performance of CPE
- Minimize multiplexing ratio

**End customers
CPE vendors**

Network providers

- Range of services

- Cost of CPE

- Revenue potential of network

- Reduced cost of multiplexing

WIDEBAND PACKET TRANSPORT

- General purpose transport
- Private line, channel, circuit, packet/datagram
- Common channel and embedded signaling
- Dynamic allocation of bandwidth
- Statistical transport

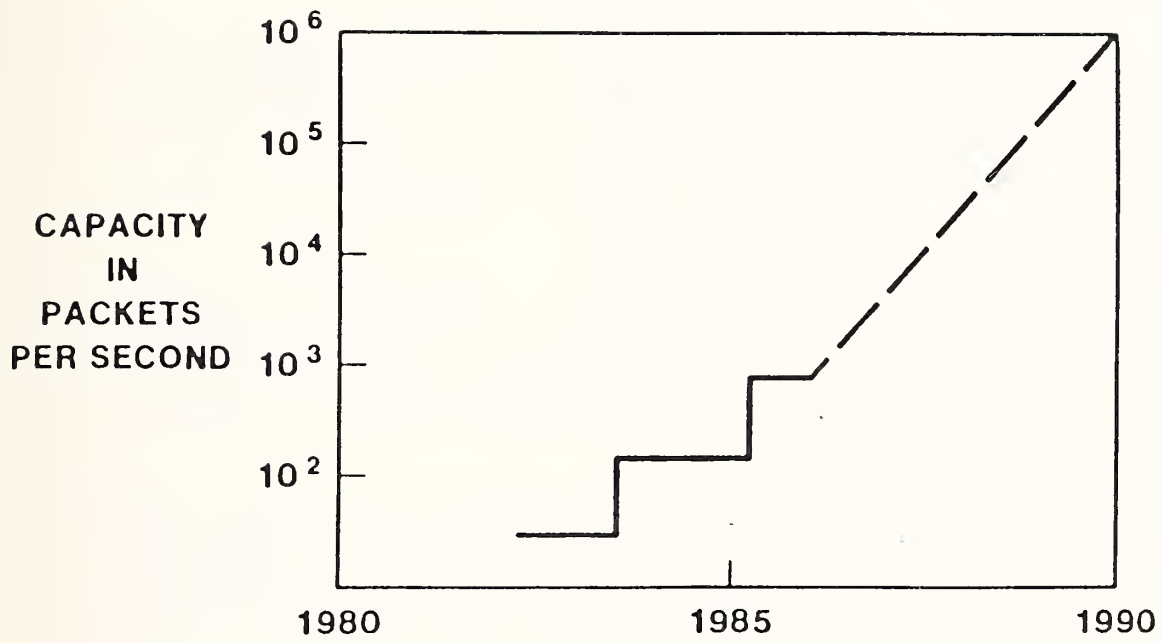
**End customers
CPE vendors**

- Service flexibility
- Cost

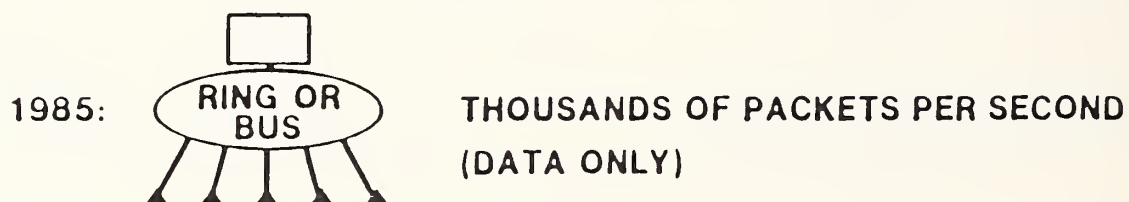
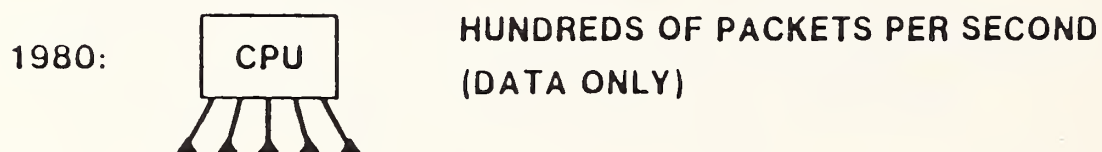
Network providers

- Revenue potential
- Transport efficiency
- Operational efficiency

PACKET SWITCHING



EVOLUTION OF PACKET NETWORKING SYSTEMS



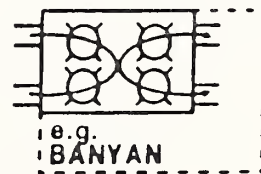
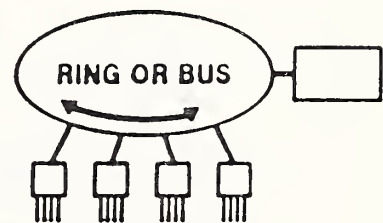
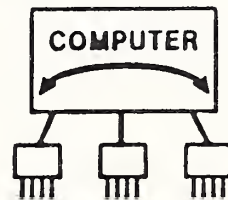
EVOLUTION OF PACKET SWITCHES

FIRST GENERATION
SWITCHING IN
COMPUTER MEMORY

SECOND GENERATION
SWITCHING ON
SINGLE SHARED MEDIUM

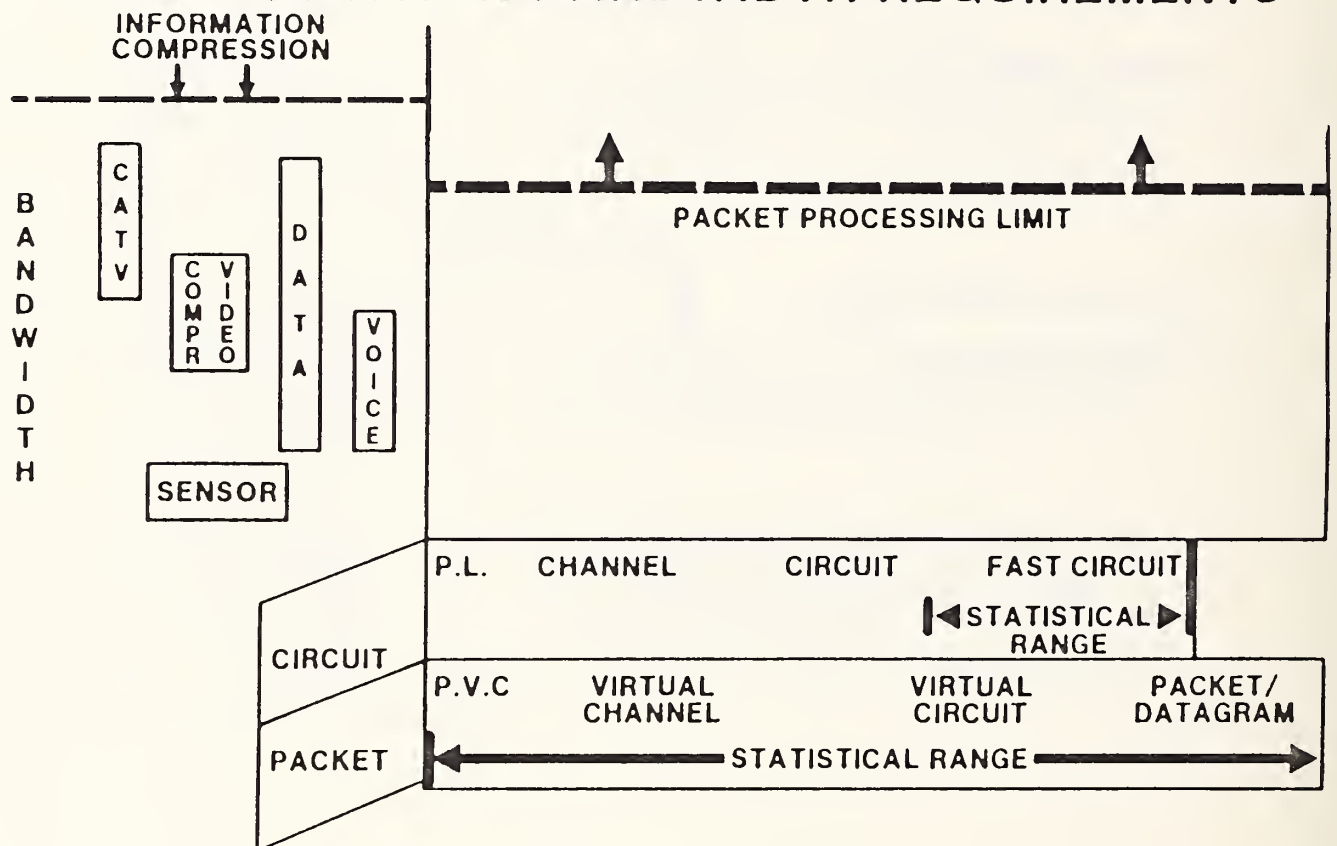
PSEUDO-
PARALLELISM

THIRD GENERATION: TRUE PARALLELISM
GROWABLE MODULAR FABRIC
WITH MULTIPLE SIMULTANEOUS PATHS



HO 1000 100

CAPABILITY OF WIDEBAND PACKET TECHNOLOGY vs INFORMATION BANDWIDTH REQUIREMENTS



BENEFITS OF A WIDEBAND PACKET NETWORK ARCHITECTURE

- **High speed digital transmission**
 - High performance and efficient use of network resources
- **Simple internal network protocols**
 - Multiple media transport in a fast, reliable and flexible manner
- **Separation of services from transport**
 - Rapid introduction of new services with usage-based charging

TRANSPORT EFFICIENCY

- Statistical transport
- Dynamic allocation of bandwidth
- Information compression
- Routing flexibility
 - Alternate
 - Non-hierarchical
 - Intrinsic virtual circuit
- Priority transport
- Overload management

End customers	Enhanced service providers CPE vendors	Network providers
<ul style="list-style-type: none">- Cost- Transport options- Usage sensitive billing	<ul style="list-style-type: none">- Service options, economics	<ul style="list-style-type: none">- Cost/performance- Billing flexibility- Efficiency- Grades of service

VIRTUAL PRIVATE NETWORKS

- Network on demand
- Statistical, software defined
- Cost effective
- Reserved capacity can exceed real network capacity

End customers
Enhanced service providers
CPE vendors

Network providers

- New applications
- Rapid access
- Cost

- Retain key customers
- Applications, revenues

GRACEFUL NETWORK EVOLUTION

Phase I

Focus on uniform standards and laying the architectural foundation for evolution



Phase II

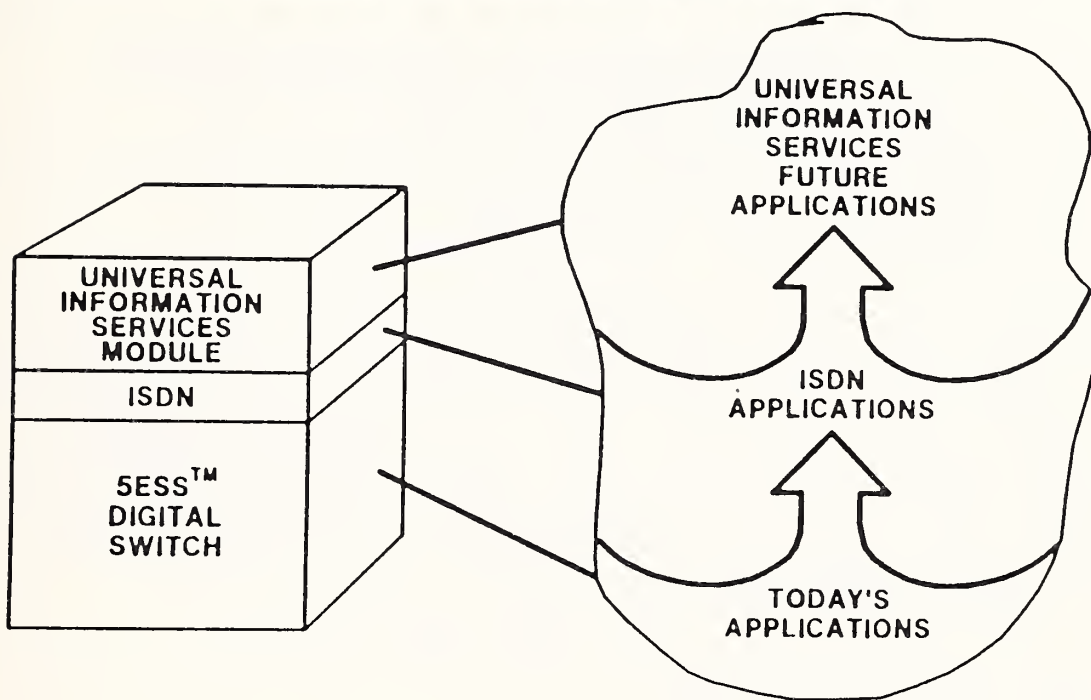
Integrated Services Digital Network (ISDN) with fixed format integrated access



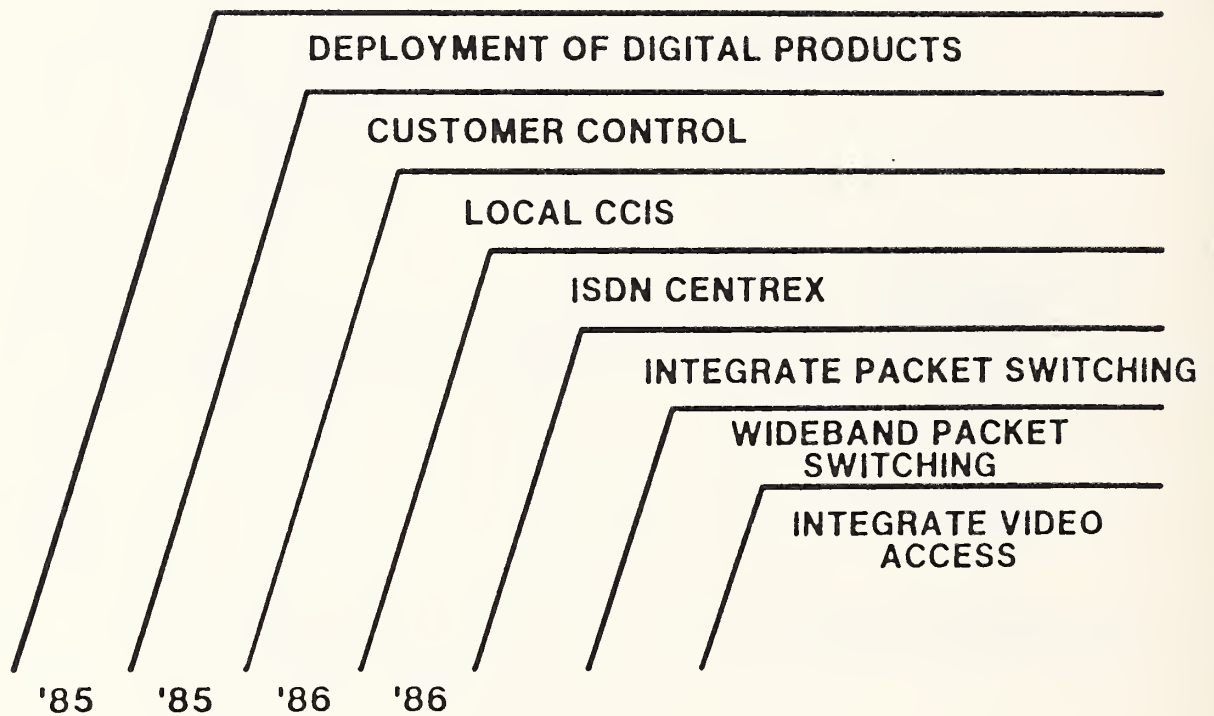
Phase III

Achievement of Universal Information Services, including integrated transport systems and adaptive logically provided services

MODULAR ARCHITECTURE IS THE KEY TO TRANSITION



ROADMAP TO UNIVERSAL INFORMATION SERVICES



IMPLICATIONS OF AT&T NETWORK SYSTEM'S UNIVERSAL INFORMATION SERVICES

Revenue growth - market retention

- Ease of network access**
- Adaptive logically provided services**
- Programmability**
- Virtual private networks**
- Usage sensitive pricing**

Cost effectiveness

- Transport efficiencies**
- Integrated network price/performance**
- Operational efficiencies**

AT&T: UNIQUELY POSITIONED TO ACHIEVE THE VISION OF THE FUTURE

- **Advanced modular architecture**
- **Leadership in wideband packet transport**
- **Widescale involvement in the information movement and management marketplace**
- **Comprehensive resources**

UNIVERSAL INFORMATION SERVICES:

A Summary

- **General purpose network fabric for voice, data, image and signaling**
- **Wideband digital access**
- **Adaptive logically provided services**
- **Universal port**
- **Virtual private networks**
- **Transport efficiency**
- **Architectural freedom**

**ARNOLD HEIBER
MARKET MANAGER, ADVANCED NETWORK PLANNING
AND STRATEGY
AT&T TECHNOLOGY**

Arnold Heiber is the Market Manager of Advanced Network Planning and Strategy for AT&T Technologies - Network Systems. He originated the concepts and strategy for AT&T's Universal Information Services program and was the leading proponent for the transition to a general purpose network architecture based on wideband packet transport.

Previously, Mr. Heiber established AT&T's local area network project. He has worked for AT&T, Western Electric, and AT&T Bell Laboratories. He has a degree in Mechanical Engineering from New Mexico University.

INPUT®

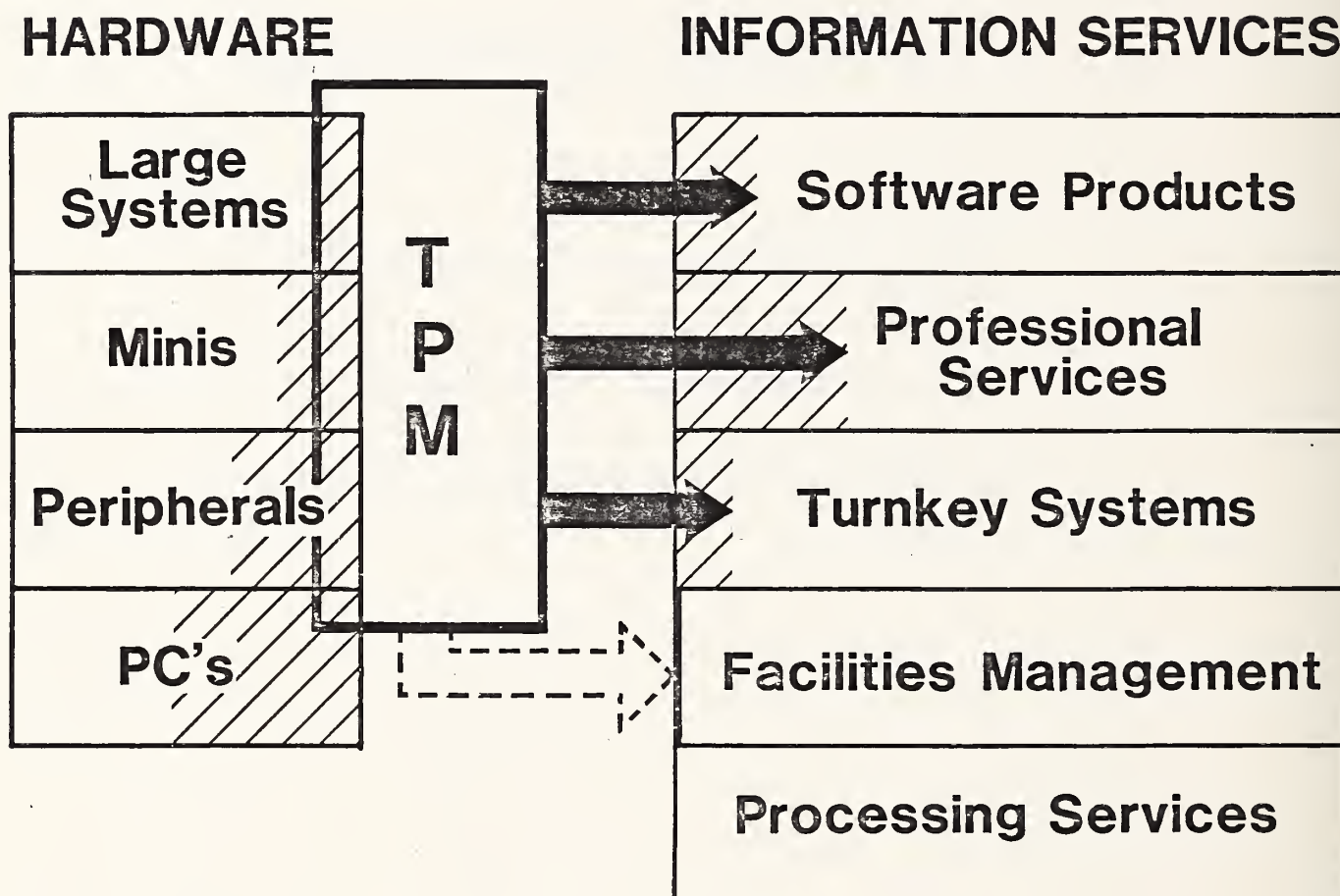
THE VALUE OF THIRD-PARTY MAINTENANCE

**Graham Kemp
Vice President
INPUT**

THIRD PARTY MAINTENANCE

**“The Provision of Maintenance
and Support Services
for Other Manufacturers Products”**

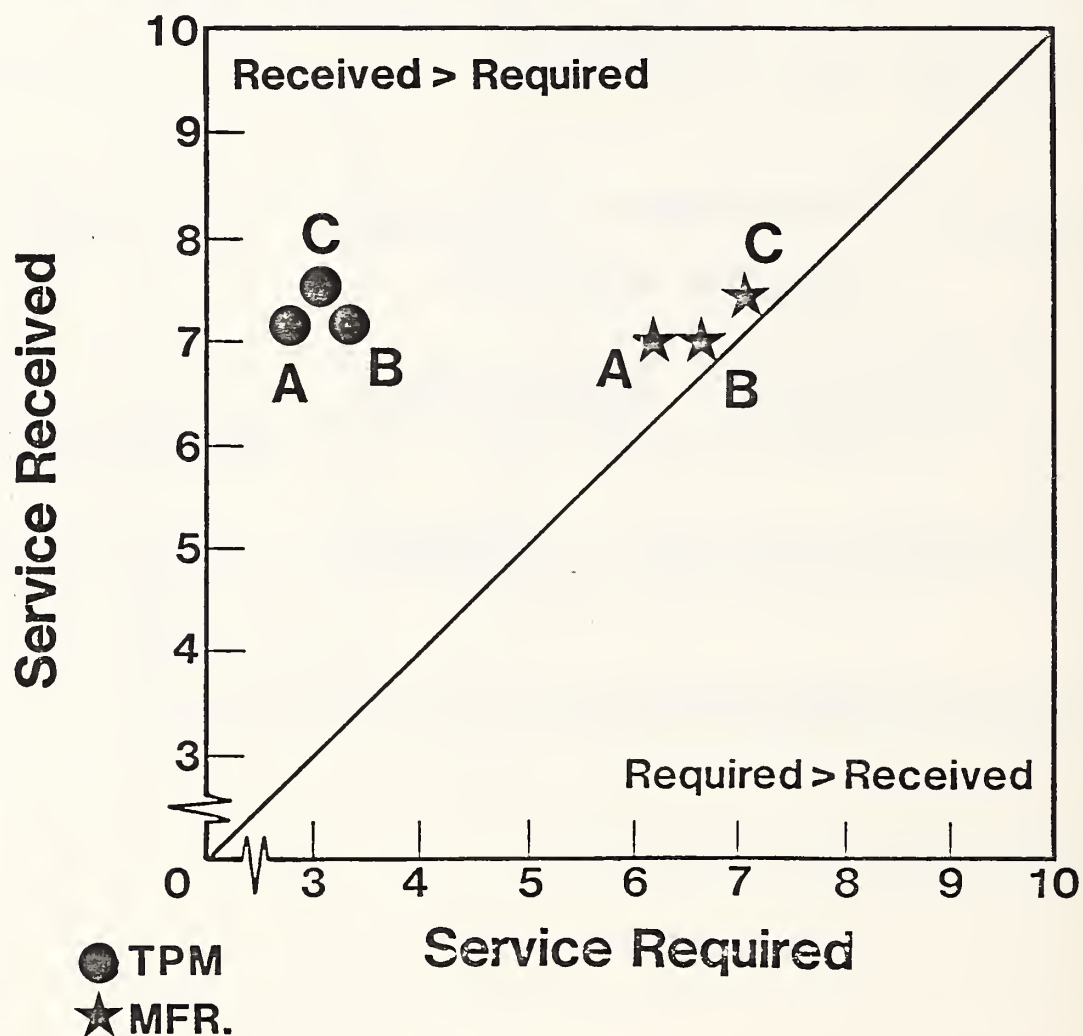
TPM: THE VENDOR VIEW



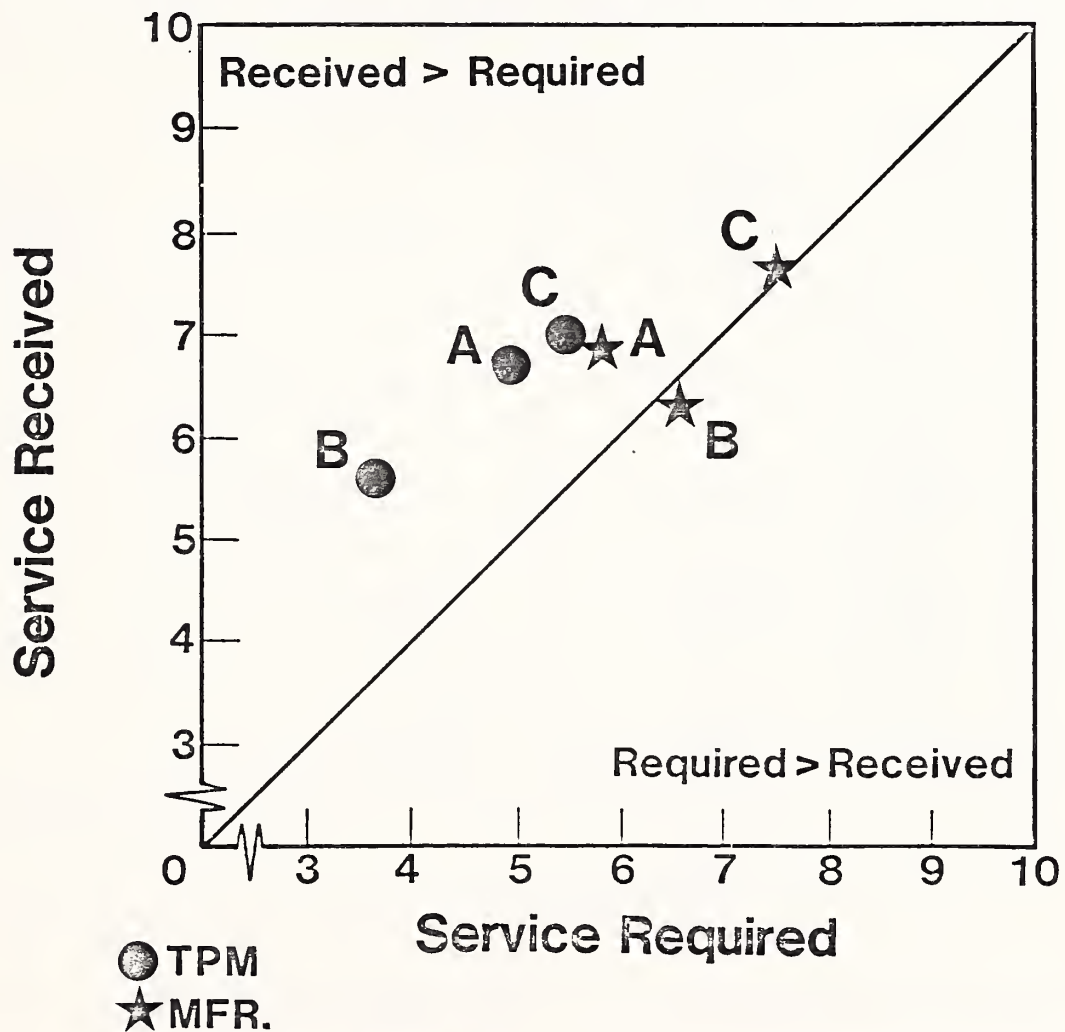
TPM: THE USER VIEW

- **Sole Source Service for Mixed Vendor Systems**
 - **Substantial Service Cost Reduction**
 - **Improved System Availability**
 - **(In Some Cases, No Choice)**
-

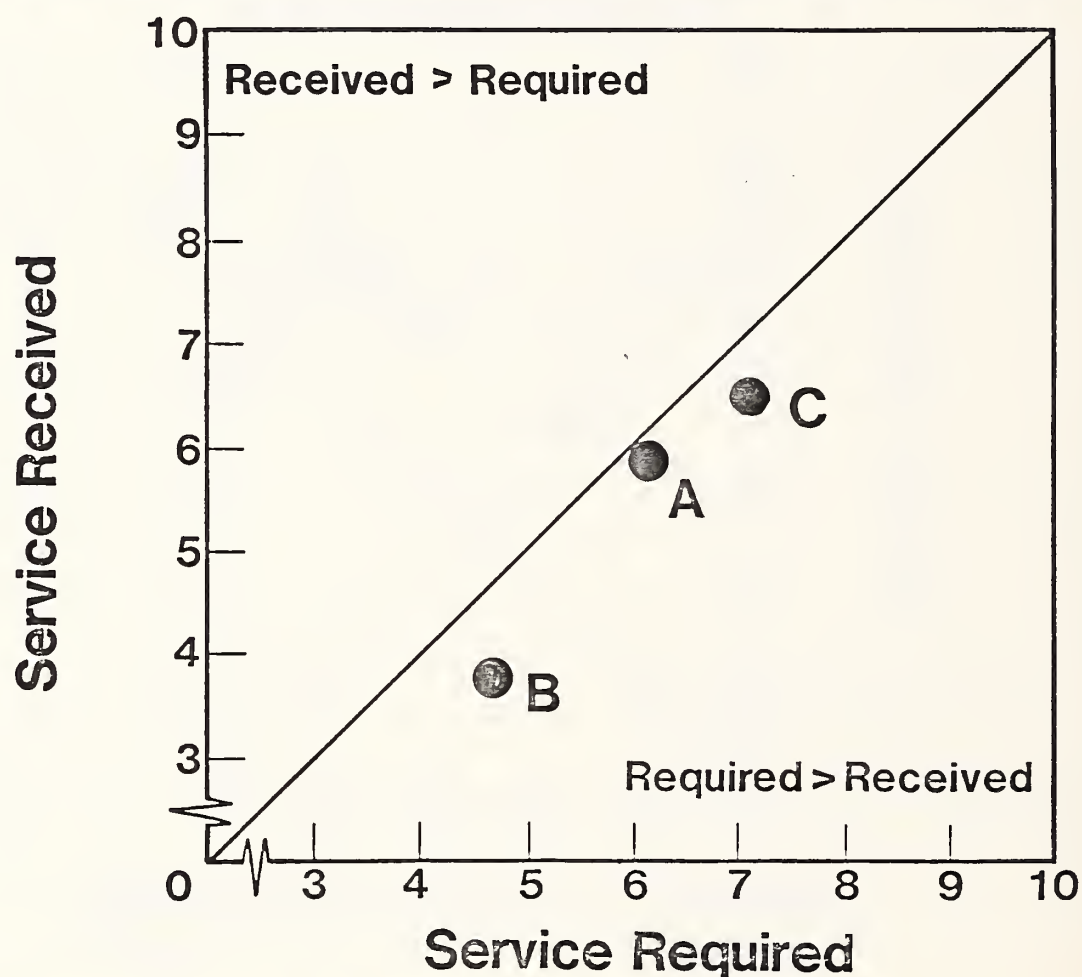
LARGE SYSTEMS: TPM vs. MANUFACTURER



PERIPHERALS: TPM vs. MANUFACTURER



USER SATISFACTION WITH POST SALE SUPPORT REQUIRED/RECEIVED PRODUCT = MICROCOMPUTERS



TOP TPM VENDOR REVENUES

1985 RANK	VENDOR	REVENUES 1985	MARKET SHARE (%)
1	TRW Services	\$232	17.4%
2	SORBUS	202	15.2
3	CDC/COMMA	110	8.3
4	RCA Services	86	6.5

U.S. TPM MARKET IN TRANSITION

- **Out of Top 20 1984 TPM Vendors:**
 - **Three were Acquired (SORBUS, MTTR, Tymshare)**
 - **One is Collapsing (Western Union)**
 - **Three are Shaky (Xerox, Kalbro, Braegen)**
 - **1985 Largest U.S. TPM not in 1984 List**
-

TPM MARKET ENTERING PHASE II

- **Mergers/Acquisitions Consolidate Top Vendors**
 - **Equipment Manufacturers Begin to Compete**
 - **At Their Own Sites**
 - **For Peripheral/Terminal/PC/Telecoms**
 - **490 U.S. TPM's in a \$1.3B Market**
-

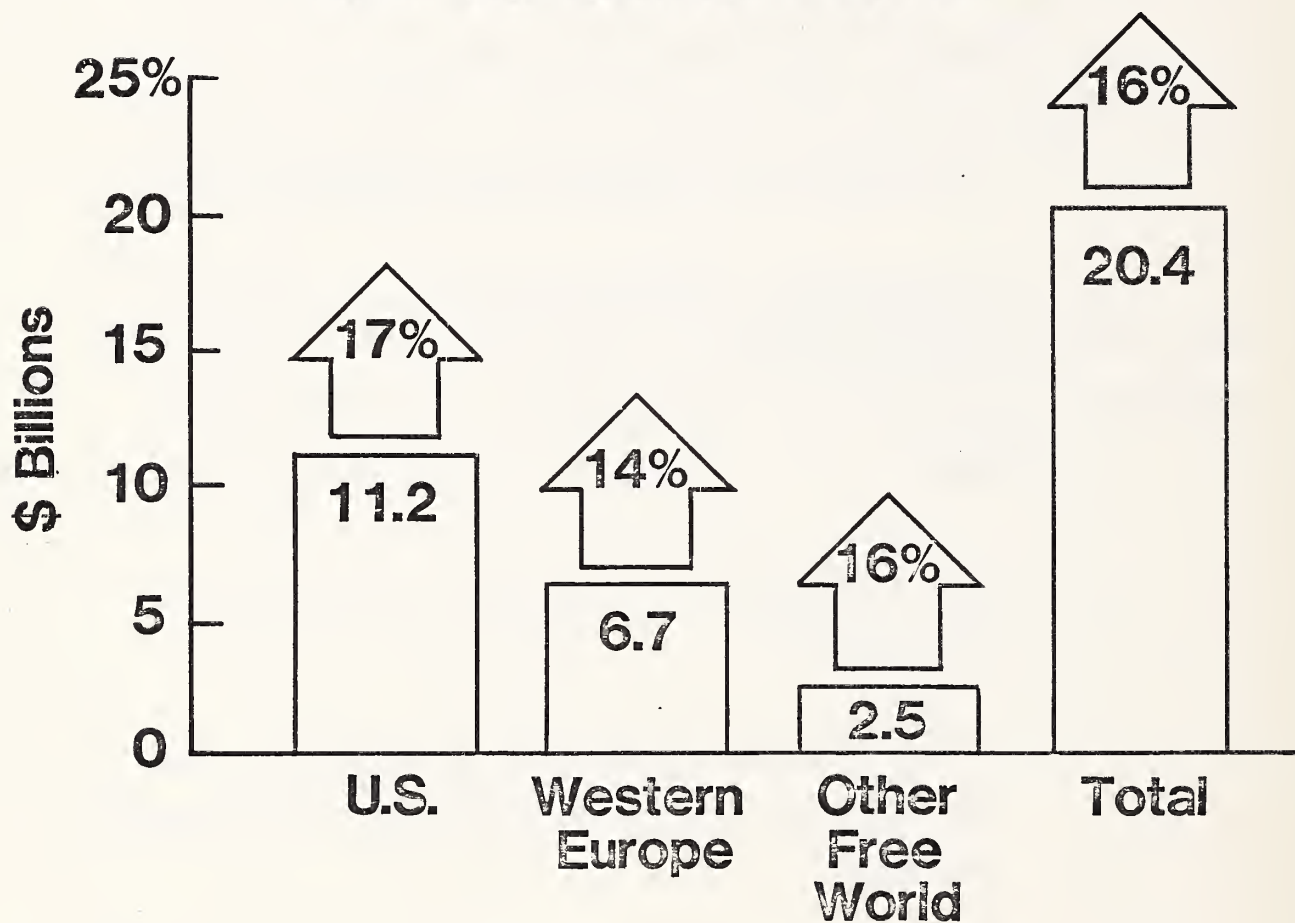
**TPM IS NOW
AN INTEGRAL PART OF SERVICE MARKET**

- **Users Know They Have an Alternative to Manufacturer Service**
 - **Users are Moving Towards Single Source Maintenance Suppliers and Higher Levels of Systems Availability**
-

NEW AREAS INCLUDE . . .

- **Single Source Maintenance:**
 - **Increased Customer Satisfaction**
 - **Excludes Competition, Controls Accounts**
 - **TPM:**
 - **No Longer an Option for System Vendors**
 - **The Fastest Growing Market Opportunity in Hardware Maintenance Arena**
-

WORLDWIDE CUSTOMER SERVICES MARKETS 1984 AND GROWTH TO 1990



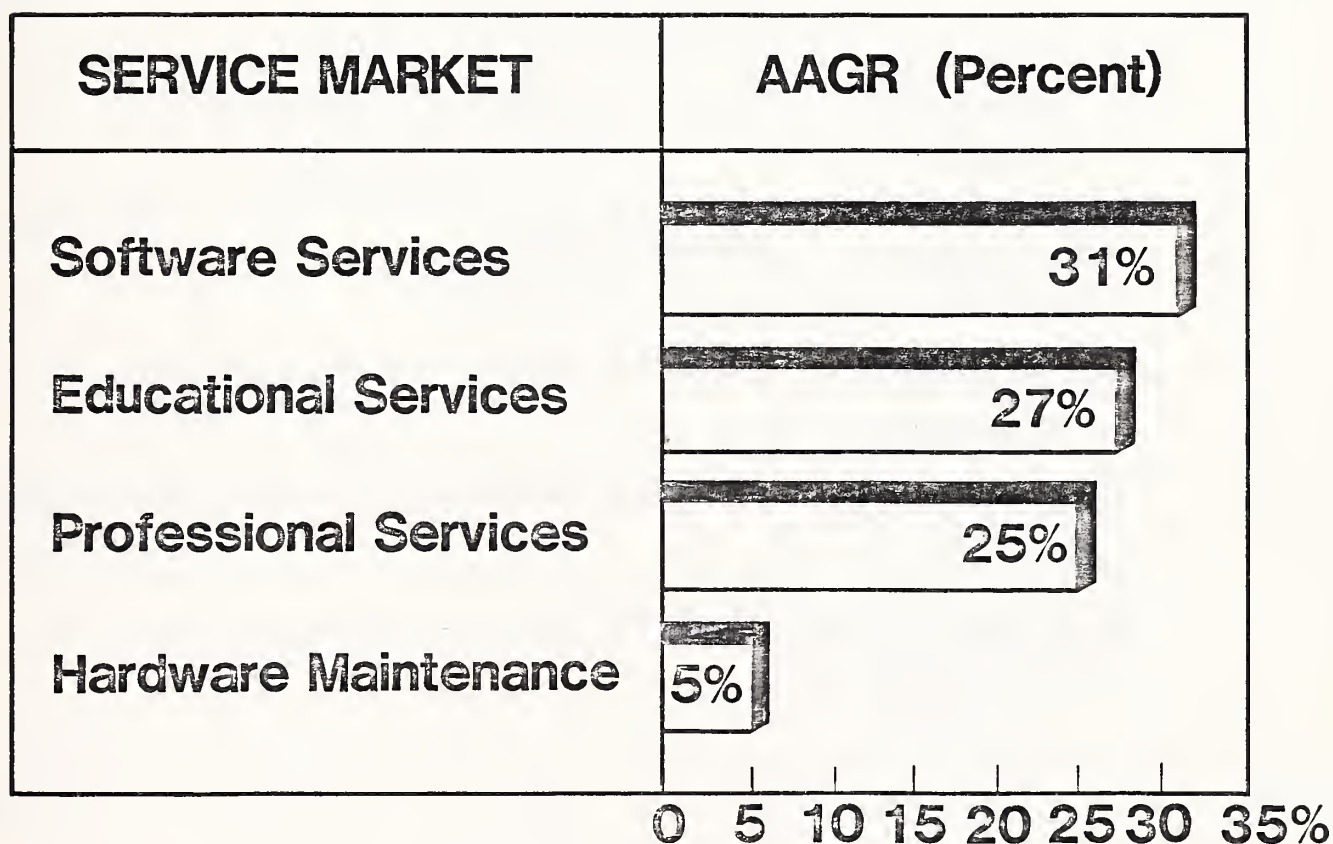
**IBM DRIVING MAINTENANCE PRICE
UMBRELLA DOWN**

- **Target for IBM: #1 Competitive Force in All Markets**
 - **This Means Hardware Maintenance, Based on Dramatic Improvements in IBM Product Reliability**
 - **Will Impact Total Profit Picture of Some Vendors**
-

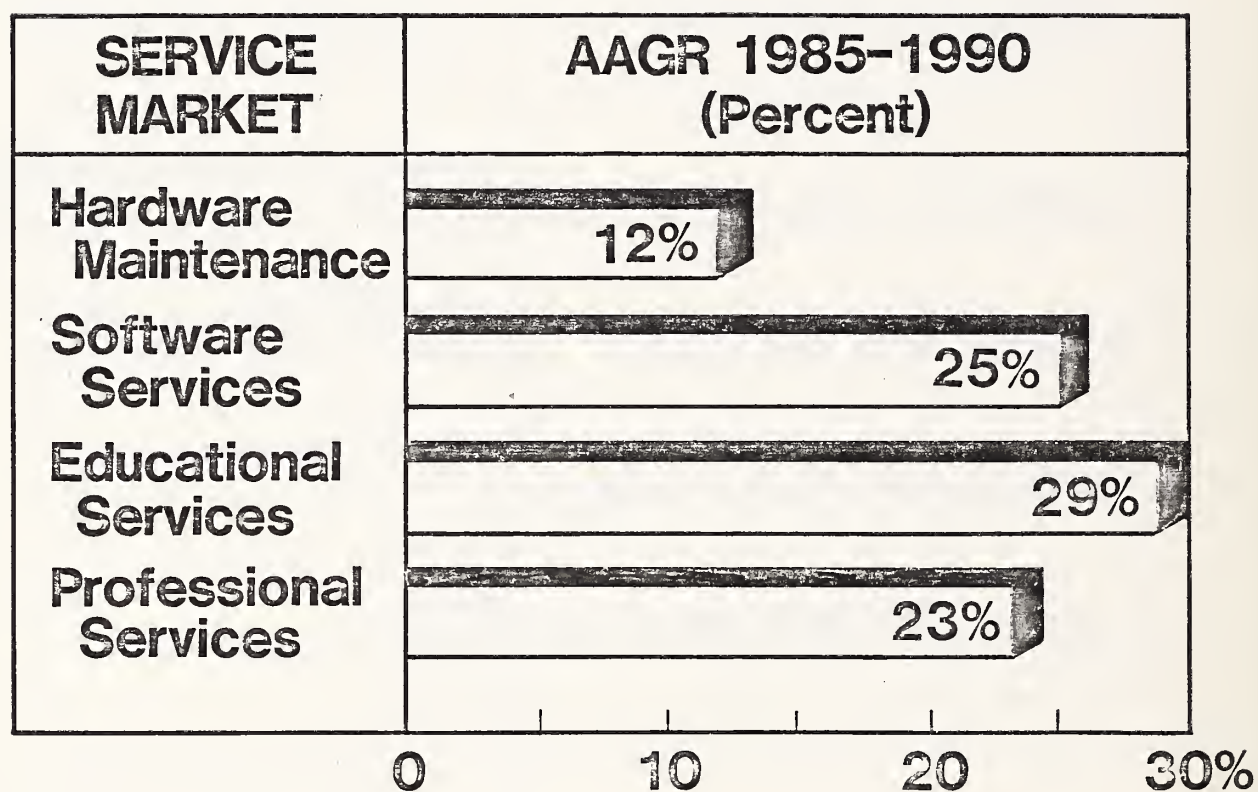
**CHANGES IN MIX OF U.S. SERVICE
REVENUE SOURCES (1985-1990)**

SERVICE	1985	1990
Hardware Maintenance	90%	81%
Software Services	6	11
Professional Services	3	5
Educational Services	1	3

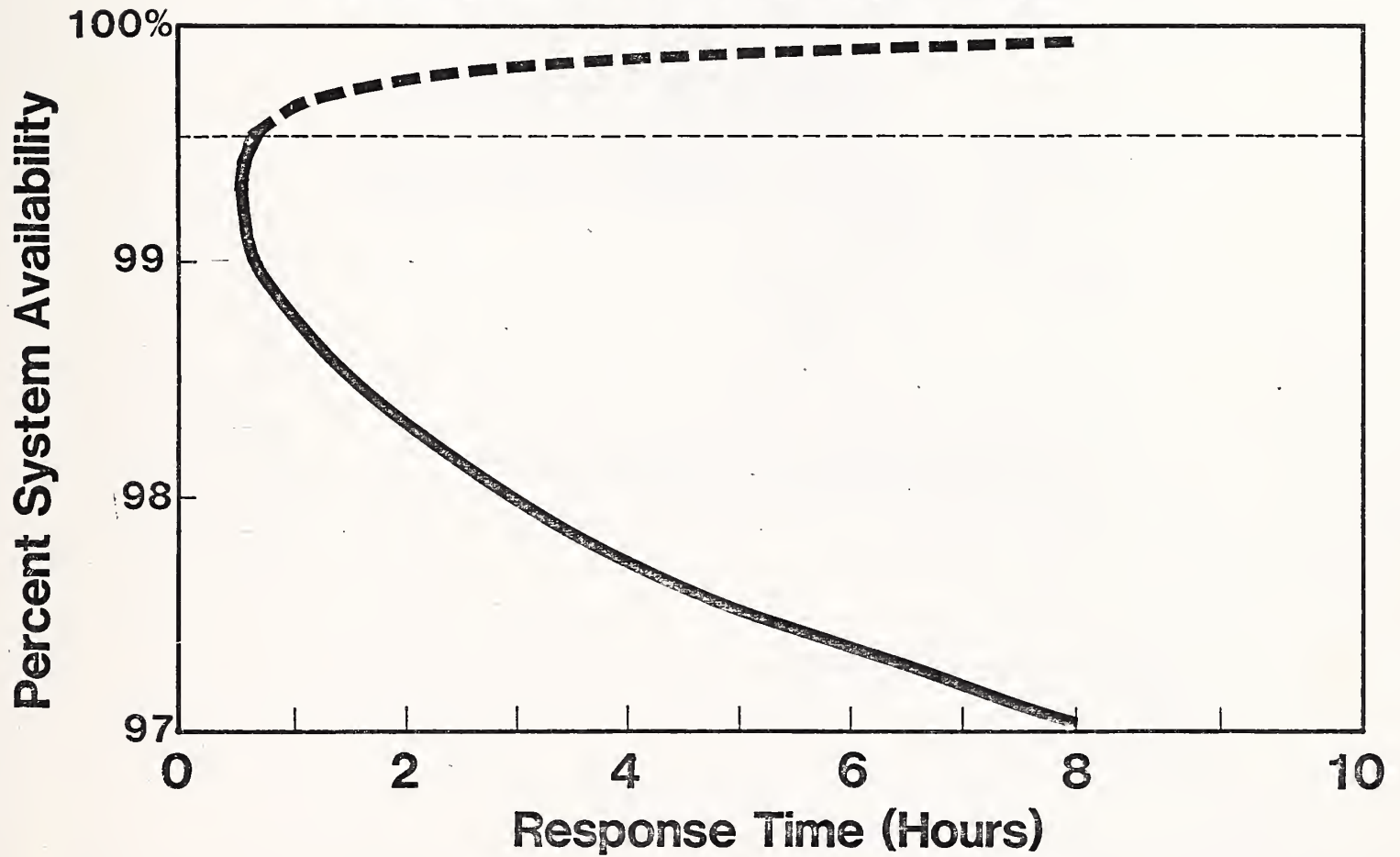
LARGE-SYSTEM SERVICE GROWTH BY SECTOR (1985-1990)



SMALL-SYSTEM SERVICE GROWTH BY SECTOR (1985-1990)



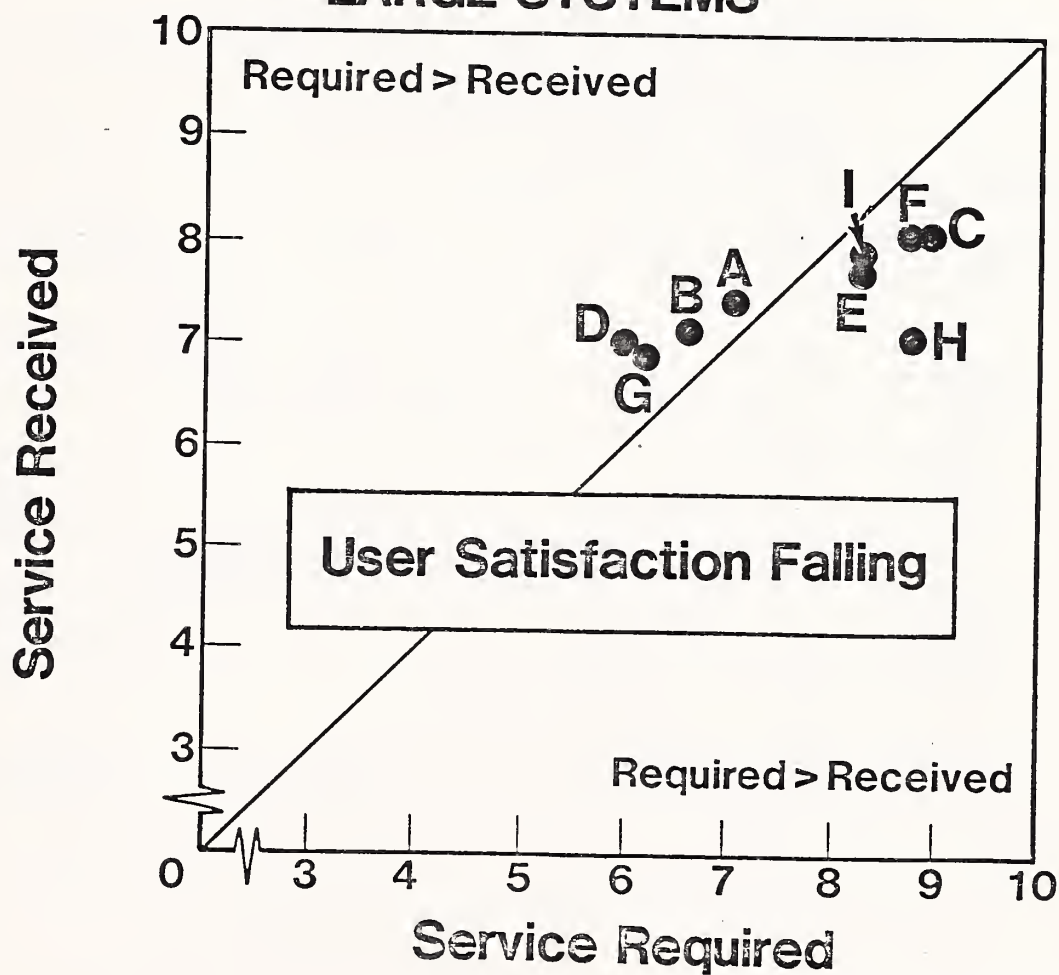
SYSTEM AVAILABILITY vs. REDUNDANT HARDWARE vs. RESPONSE TIME



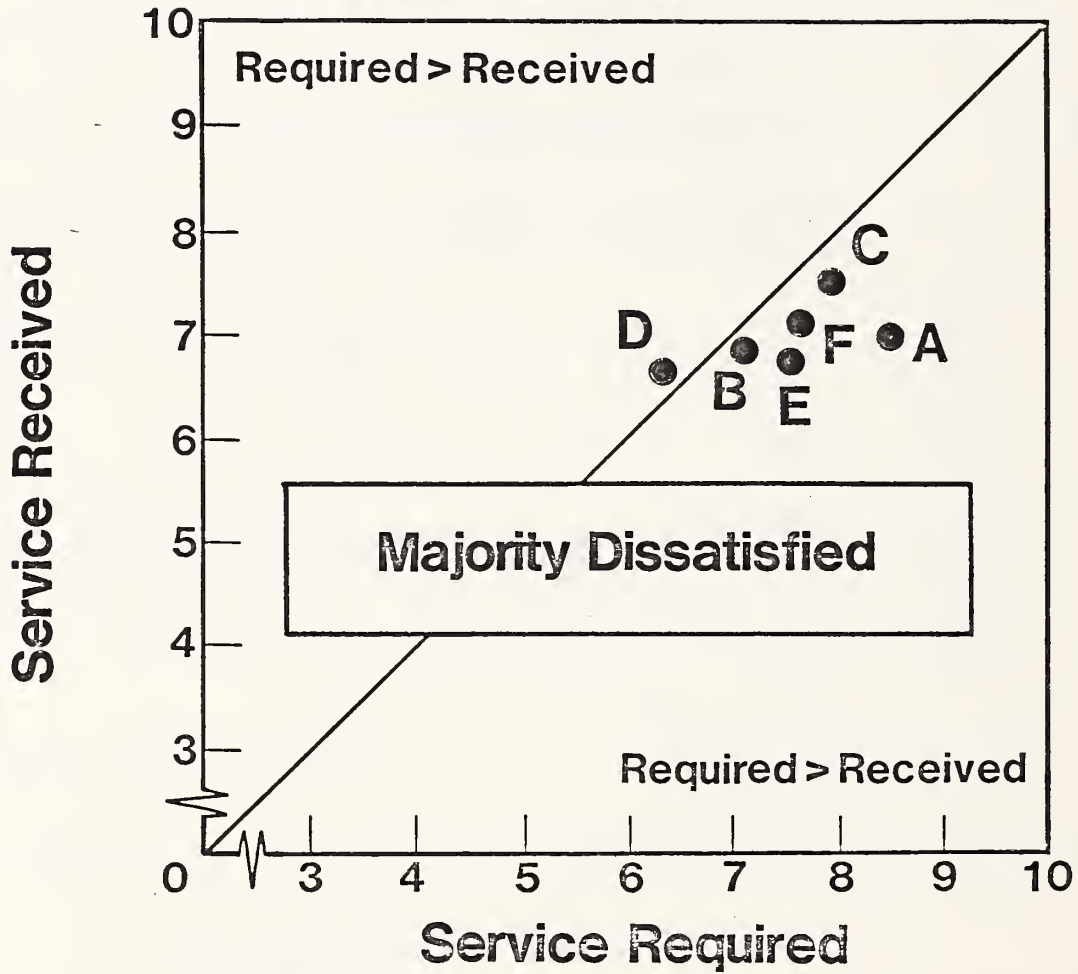
INPUT®

**CUSTOMER SERVICES
USER NEEDS ANALYSIS**

LARGE SYSTEMS SERVICE PERFORMANCE: LARGE SYSTEMS



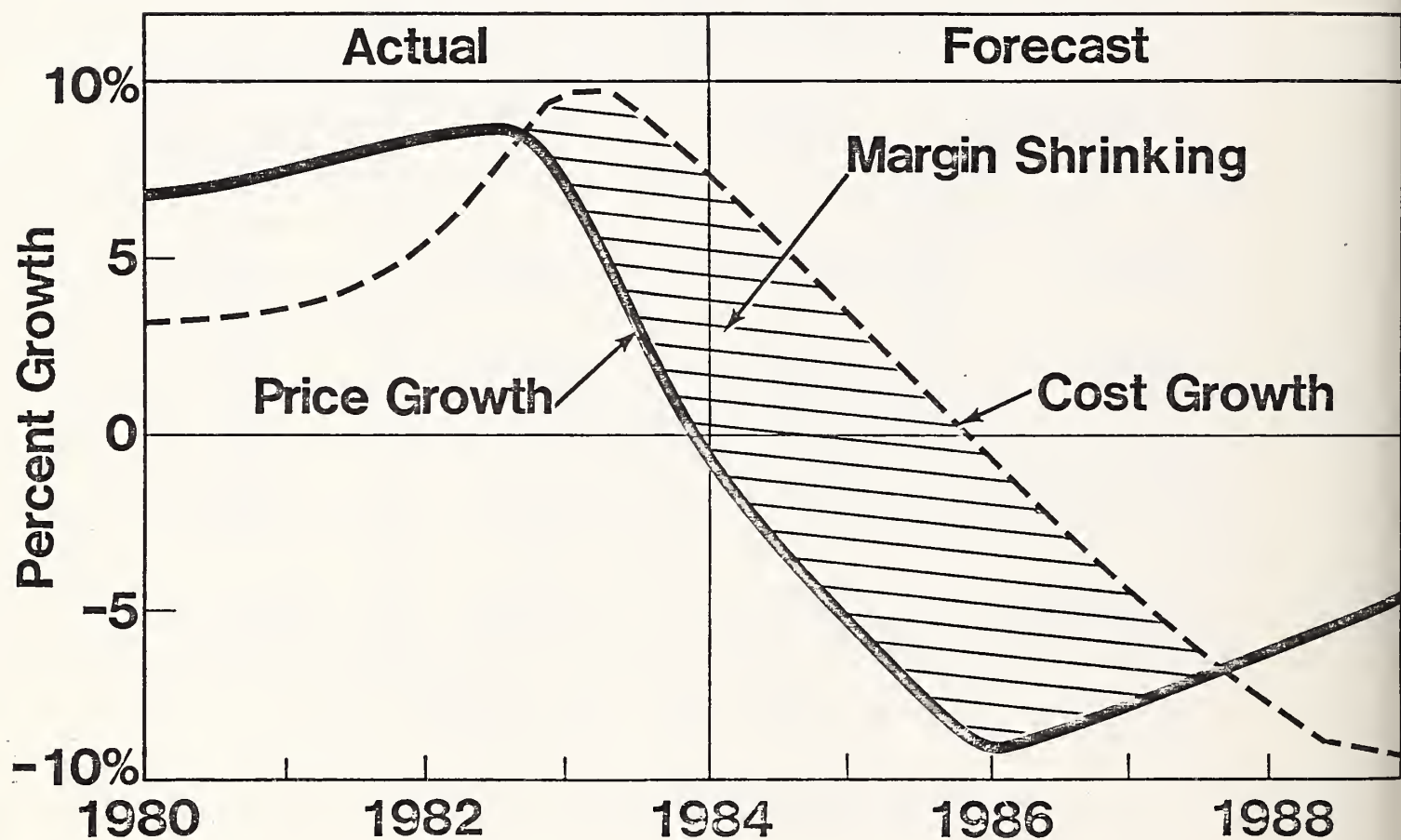
**VENDORS SOFTWARE SUPPORT PERFORMANCE:
LARGE SYSTEMS**



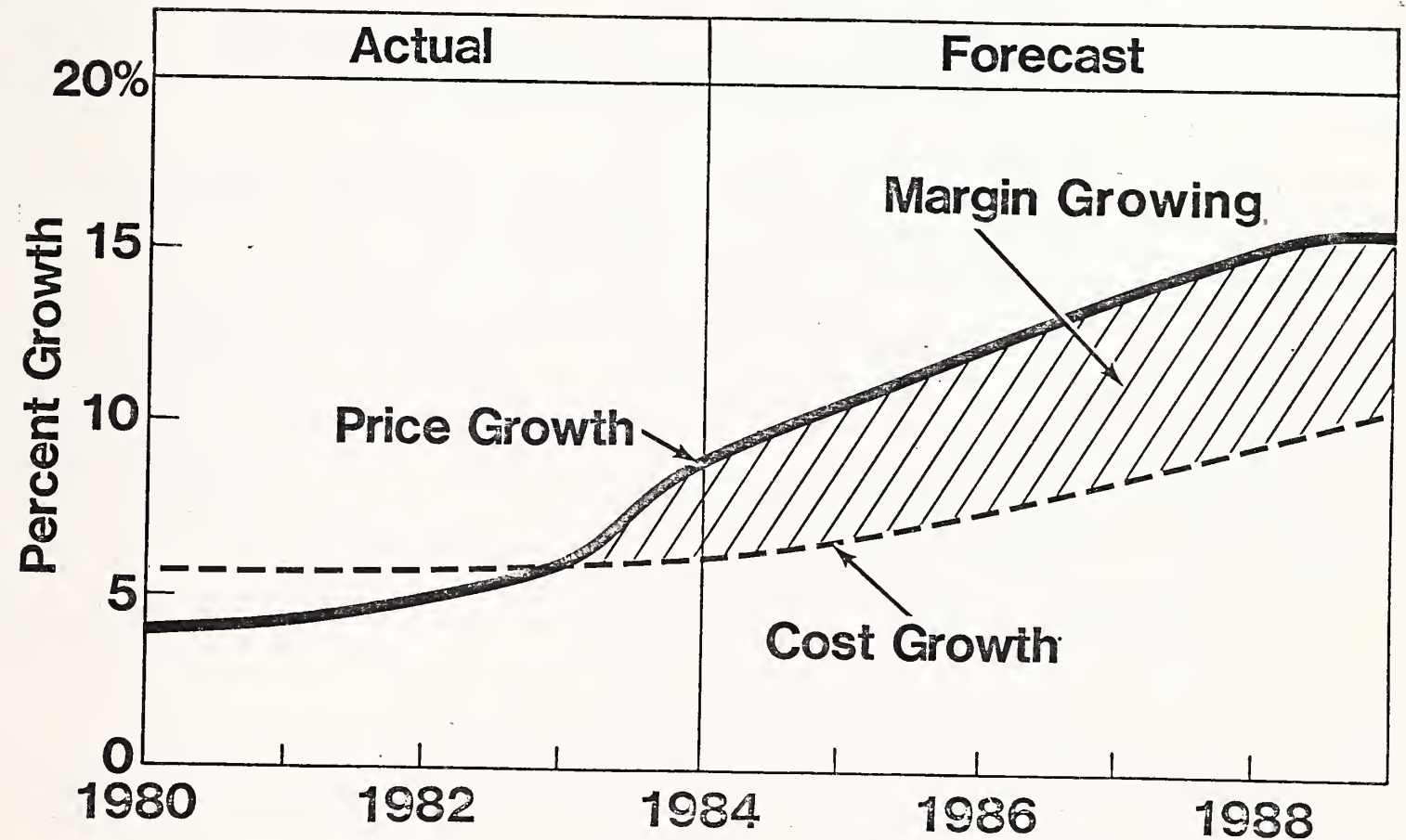
**LARGE SYSTEMS AVAILABILITY
(PERCENT OF SCHEDULED UPTIME)**

VENDOR	AVERAGE UPTIME %		% CHANGE 1984-1985
	1985	1984	
NAS	99.8%	98.5%	1.3%
IBM	98.2	97.1	1.1
Burroughs	98.1	98.3	(0.2)
Amdahl	97.7	98.0	(0.3)

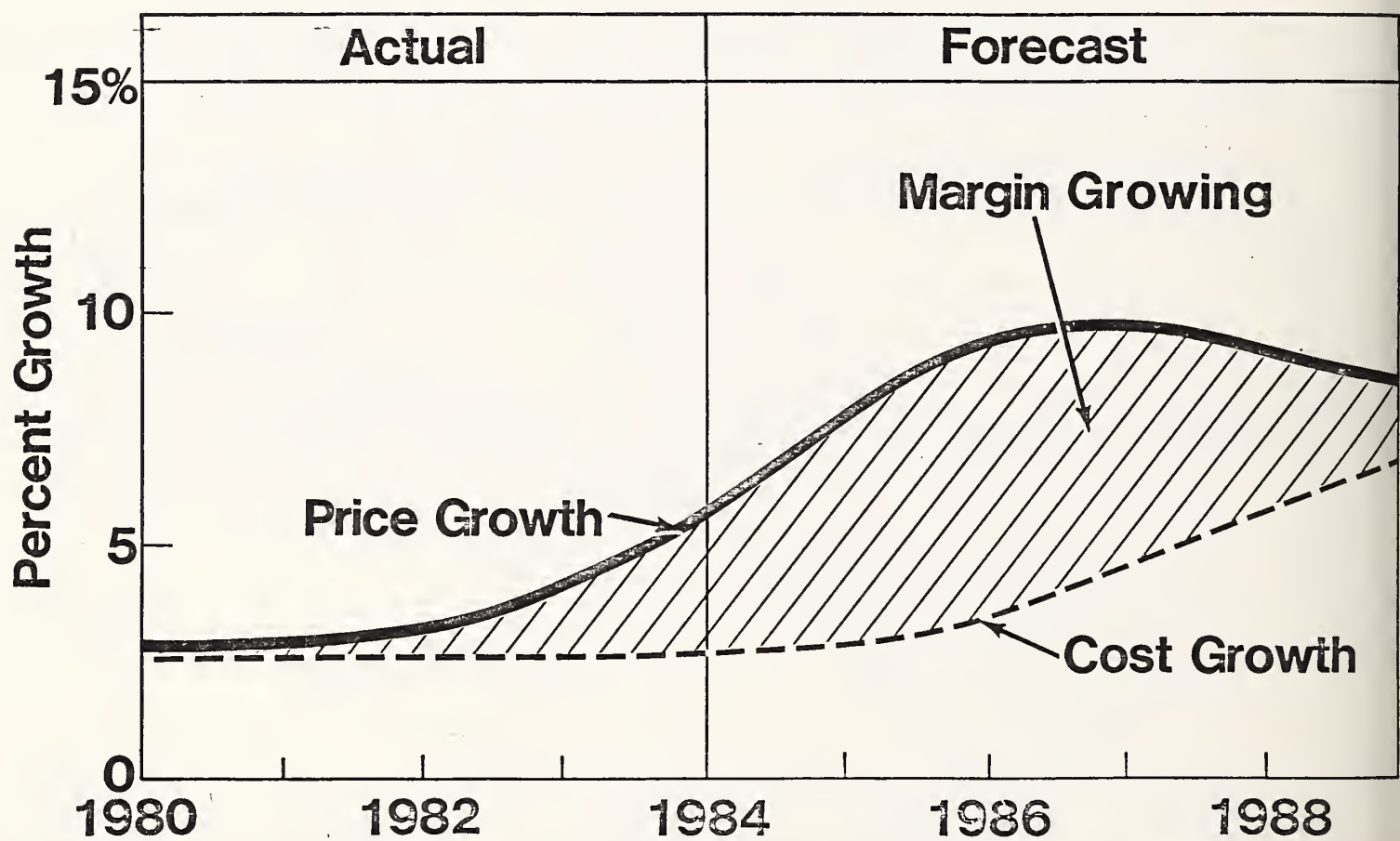
LARGE-SYSTEM HARDWARE MAINTENANCE MARGIN GROWTH 1980-1989




MAINFRAME SYSTEMS SOFTWARE MAINTENANCE MARGIN, 1980-1989



LARGE-SYSTEM PROFESSIONAL SERVICES MARGIN GROWTH, 1980-1989



PC SERVICE: A GROWING NEED

YEAR	SYSTEM AVAILABILITY		
	REQUIRED	RECEIVED	
1984	81.7%	86.0%	4.3%
1985	89.1%	95.5%	-3.6%
	7.4%	-1.5%	

Opportunity For TPMs

**SERVICE PRICING,
DISCOUNTING & PROFITABILITY**

SERVICE PRICING

- In U.S., Increasingly Based on Competition, Even if it is Below Cost
 - List Prices no Longer Firm:
 - Negotiated
 - Discounted
 - In Europe: Usually Cost-Based
-

IBM: A MOVING TARGET

Example: 308X Announcement	Purchase Price	Maintenance Cost	P/P Ratio
June '83	-	↓ 11-15%	-
Sept. '83	↓ 11-14%	-	↑ 12%
Feb. '84	↓ 7-10%	↓ 15%	↑ 11%
Feb. '85	↓ 5%	↓ 12%	↑ 5%
Total (2 yrs.)	↓ 23%	↓ 35%	↑ 30%

SELECTED IBM MAINTENANCE PRICES

<u>PRODUCT</u>	<u>ANNUAL MAINTENANCE AS % OF PURCHASE</u>	<u>INDUSTRY AVERAGE</u>
3090	1.8%	2-8%
4341	3.6	4-8%
System/38	7.1	6-10%
System/36	5.5	8-10%
Series/1	5.5	10-12%

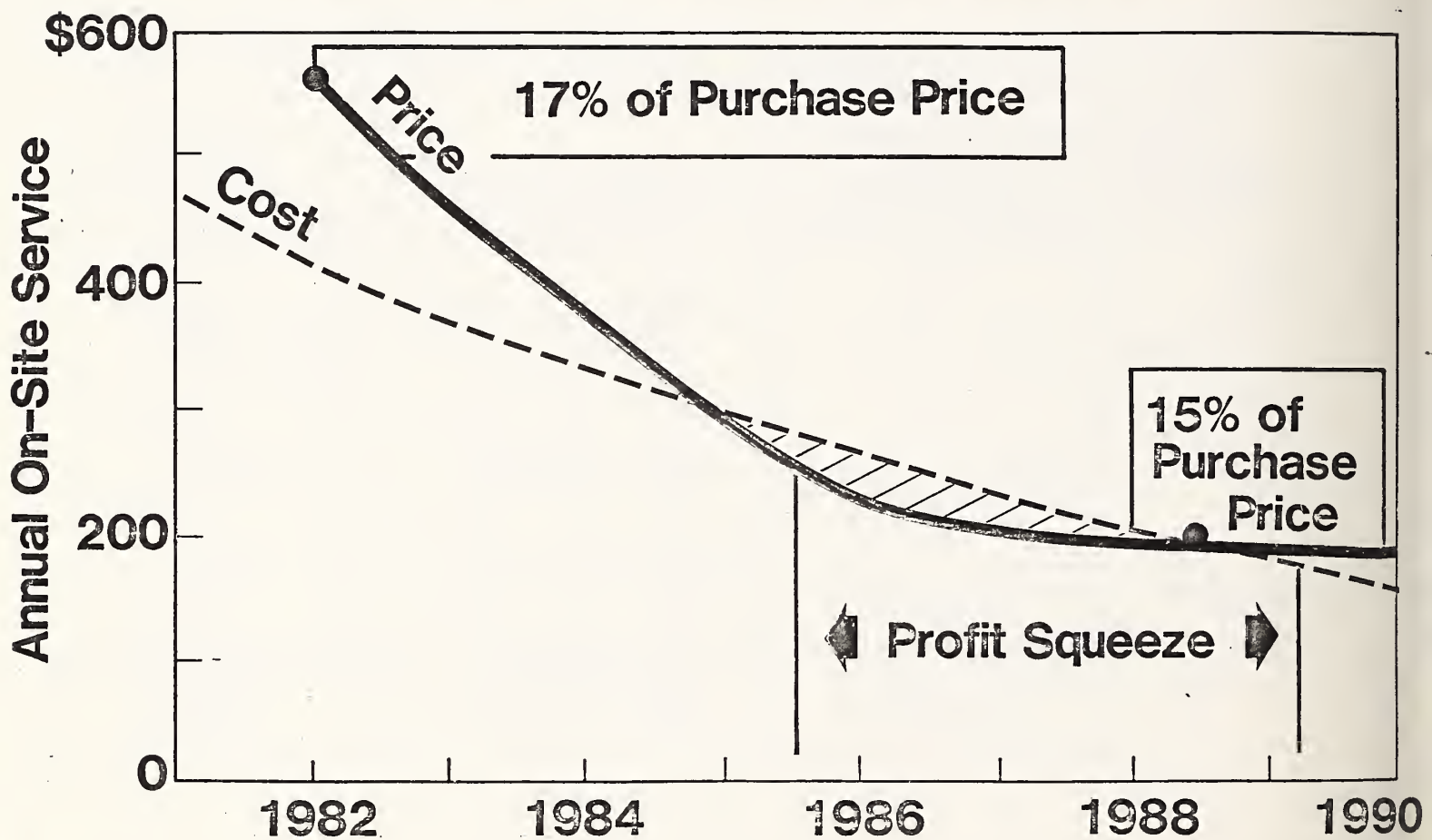
**LARGE-SYSTEM AVERAGE CONFIGURATION
SERVICE PRICE TRENDS**

VENDOR	PRODUCT	SERVICE AS % OF PURCHASE PRICE		
		1982	1984	△
Amdahl	470 V/8	8.1	6.0	-26%
CDC	Cyber 176	3.7	3.5	- 6
DEC	VAX 11/780	6.2	2.8	-55
IBM	3081 KIG	2.2	1.3	-35

PC PRICE COLLAPSE HIDES RELATIVE STABILITY IN SERVICE RATIO

VENDOR	PRODUCT	PERCENT CHANGE (1982-1984)		
		(\$) PRICE	SERVICE	SERVICE/ PRICE (%)
IBM	PC	-36%	-34%	0.6%
Apple	II	-53	-51	1.1
DEC	Rainbow 100	- 6	-21	-2.4
Tandy	TRS 80	-44	-35	3.3
Averages		-35%	-37%	-0.6%

PERSONAL COMPUTER SERVICE PRICES



VENDOR SERVICE DISCOUNTING

- **Most Negotiate Service Prices at Contract Time**
 - **Multiple System Site Discounts are Common, Based on \$ Volume**
 - **Prepayment Discounts Becoming Fashionable, in 5% to 18% Range**
-

MULTIPLE SYSTEM SITE SERVICE DISCOUNTS

VENDOR	LOW END		HIGH END	
	\$ M	%	\$ M	%
Amdahl	ES	40%	ES	40%
CDC *	DEC	15	IBM	20
Prime	3K	6	45K	20
Memorex	15K	7.5	25K	12.5

*** TPM Only; ES - Extended Services Only**

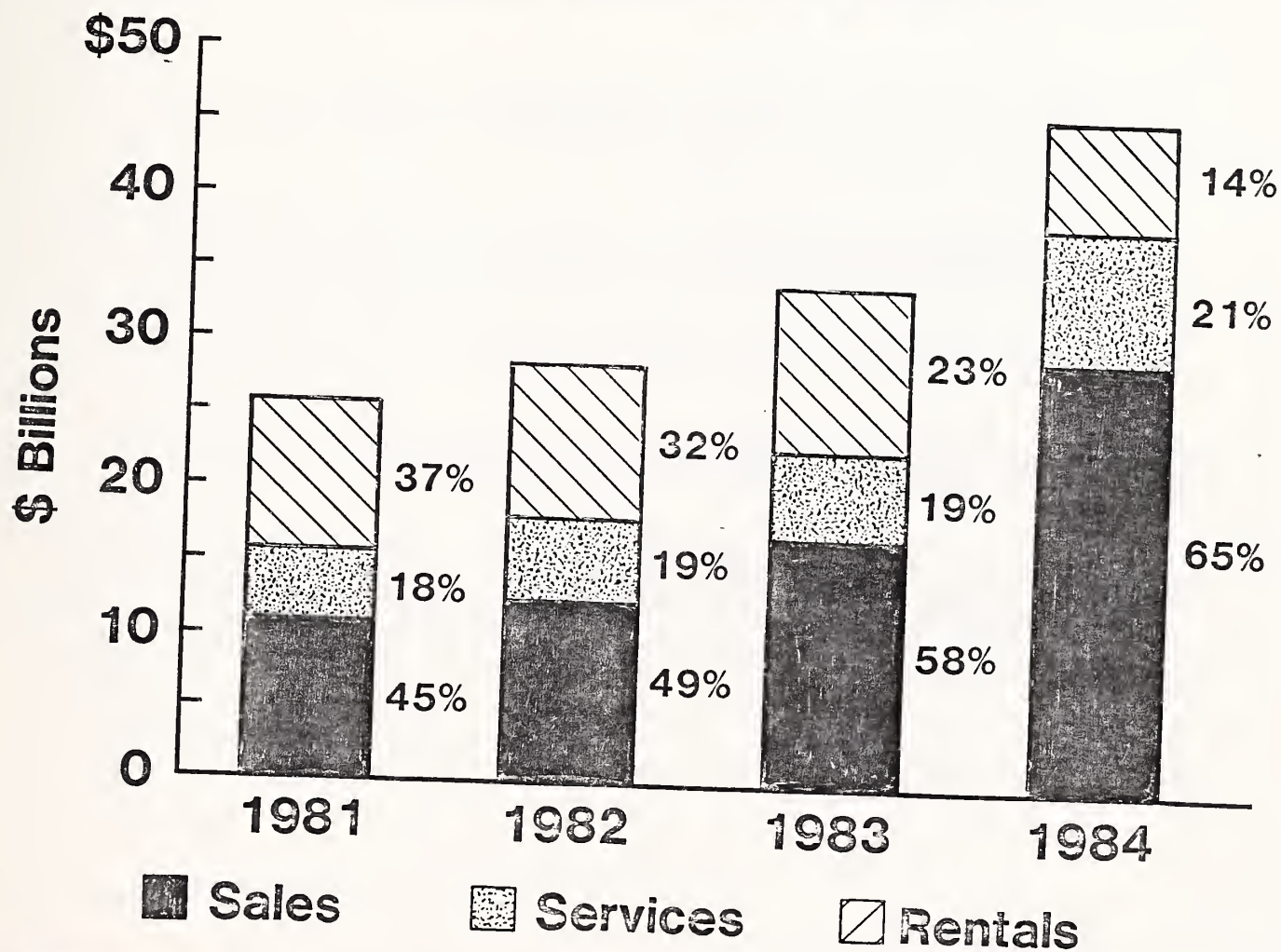
INPUT®

IBM CUSTOMER SERVICES

IBM CUSTOMER SERVICES

- **35,000 People World Wide**
 - **150 Service Branches**
 - **Three Software Support Centers (Boulder, Chicago, Tampa)**
 - **13 Diagnostic Centers**
 - **2,000 Authorized PC Dealers**
-

IBM'S LAST FOUR YEARS



U.S. SERVICE PROFIT PERFORMANCE, 1984

- **IBM Service Gross Profit up 20%**
 - **(Fastest Growth From Program Products)**
- **Most Other Service Vendor Profit Down 8%**
- **TPM Vendor Profit up 18%**

<p>NPBT TARGET SHOULD BE 20-25%</p>
--

IBM CUSTOMER SERVICE

- **1984 Service Revenue: \$6.4B, Up 15.1%**
 - **Hardware Maintenance as Percent of Total Revenue: 14%**
 - **Maintenance Gross Profit: \$3.5B Up 20.4%**
 - **Service Revenue Distribution: U.S. - 60%, Others - 40%**
 - **Service Revenue per Employee: \$182,000**
-

FOCUS ON USER REQUIREMENTS

<ul style="list-style-type: none">• Single-Source Maintenance of Mixed Vendor Hardware• Local, Reliable, Quality Service• Improved Response Time• Some Price Incentive	1985 USER REQUIREMENTS
---	---------------------------------------

FOCUS ON USER REQUIREMENTS

<ul style="list-style-type: none">• Integrated Software/Hardware Maintenance• Post-Sales Support Services<ul style="list-style-type: none">- Consulting- Training- Supplies• Price Less Important	1990 USER REQUIREMENTS
---	---------------------------------------

MAJOR RESTRUCTURING OF SERVICE ENVIRONMENT UNDERWAY

- **Market Is Increasingly User-Driven**
 - **IBM Driving Maintenance Price Umbrella Down**
 - **TPM Market Entering Phase II**
 - **Service Quality: Growth, Profit, Customer Satisfaction**
-

GRAHAM S. KEMP
VICE PRESIDENT
INPUT

Graham S. Kemp is a Vice President with INPUT responsible for all program research. His more than 23 years in the computer, office product, and communications industries includes market planning assignments involving user requirements, new product development, marketing plans, competitive analysis, and support service needs. Mr. Kemp held managerial positions with CII in France, and with Honeywell Bull and General Electric in the U.S. He was educated at Oxford and did graduate work at Bridgeport and London Universities.

**SUCCESSFULLY MARKETING
INFORMATION SYSTEMS
WITHIN YOUR ORGANIZATION**

**Joseph Cline
Division Staff Manager
Southern New England
Telephone Company**

SOUTHERN NEW ENGLAND TELEPHONE

**INDEPENDENT, INTEGRATED COMMUNICATIONS
COMPANY**

CONNECTICUT BASED

1.3 MILLION SUBSCRIBERS

\$1.2 BILLION REVENUE

14,000 EMPLOYEES

INFORMATION SYSTEMS ORGANIZATION - BACKGROUND

25 YEARS OF EXPERIENCE

HIGHLY MECHANIZED

CENTRALIZED CONTROL

EXTENSIVE COMPUTER INSTALLATION

REPORTING RELATIONSHIP TO CEO

ISO PERSPECTIVE - “WE” THINK. . .

WELL MANAGED

COST EFFECTIVE

GOOD TRACK RECORD

RESPONSIVE

ASSET VS. EXPENSE

CLIENT PERSPECTIVE - “THEY” THINK

HIGH QUALITY BUT EXPENSIVE

DIFFICULT TO DO BUSINESS WITH/UNCLEAR
INTERFACES

THE “INVISIBLE DEPARTMENT”

NOT SO RESPONSIVE

EXPENSE VS. ASSET

ISO REPOSITIONING

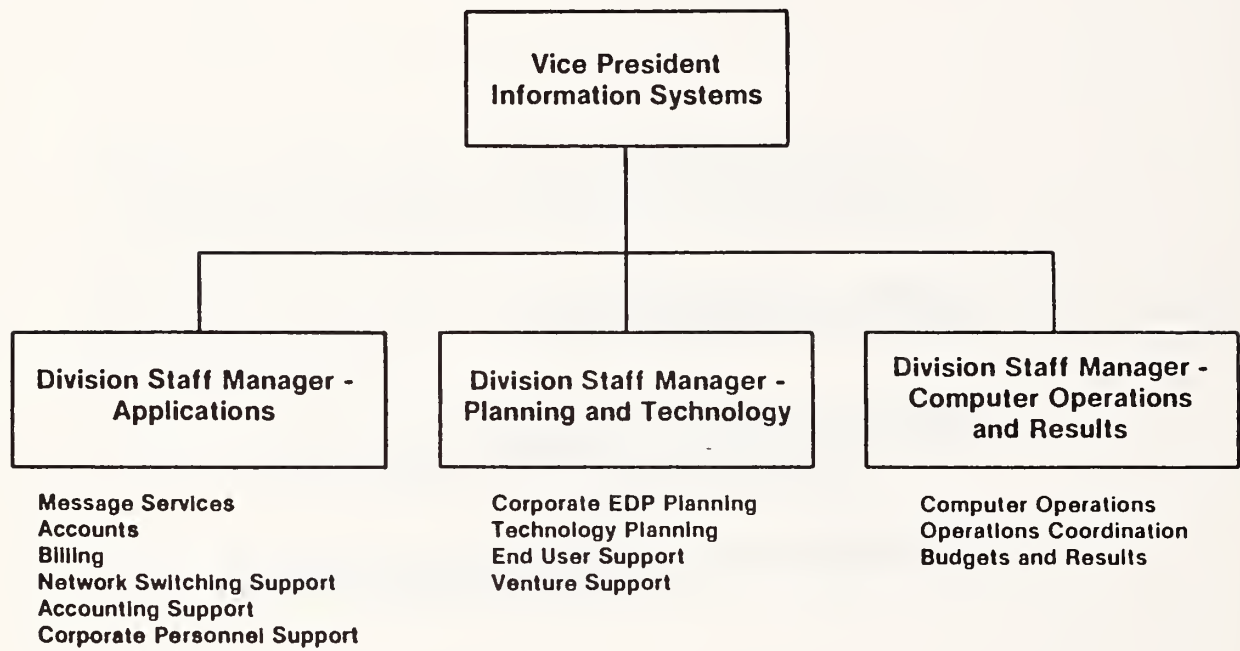
ORGANIZATIONAL REALIGNMENT

ISO ASSESSMENT

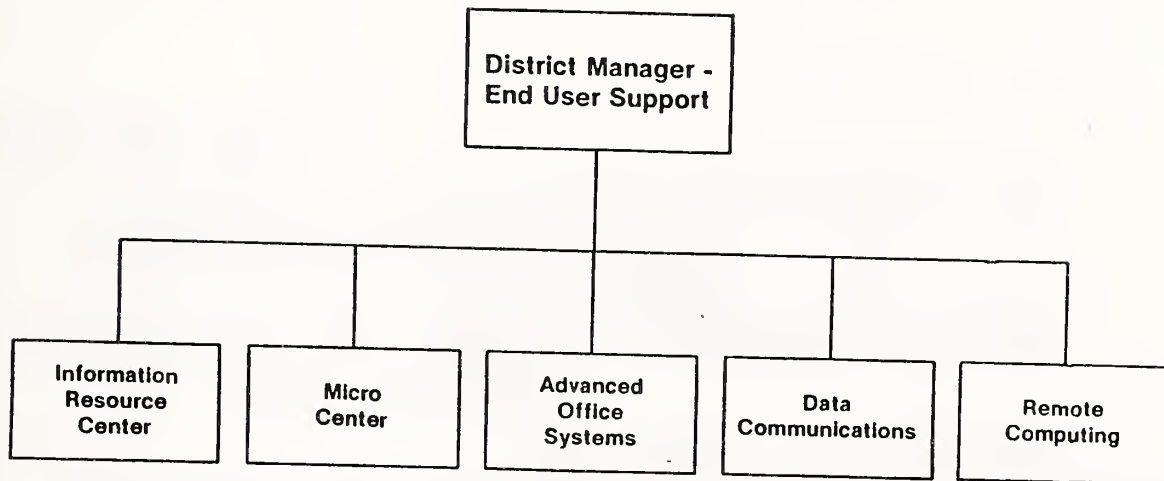
MARKETING ORIENTATION

COMMUNICATION PLANNING

ISO DEPARTMENT ORGANIZATIONAL REALIGNMENT



END USER SUPPORT DISTRICT



ISO 1985 ASSESSMENT - FOCUS

EFFICIENCY (DOING THINGS RIGHT)

EFFECTIVENESS (DOING THE RIGHT THINGS)

PLANNING PROCESS

VALUE TO SNET

ISO ROLE - 1985 AND BEYOND

MARKETING ORIENTATION

SELLING ISO

NEW CLIENT INTERFACES

END USER GROUPS

MARKET DIFFERENTIATION (SEGMENTATION)

SURVEYS

COMMUNICATIONS PLANNING

PROGRAM FOR SENIOR LEVEL EDUCATION

COMMUNICATIONS PLANNING

SNET MANAGERS GUIDE TO ISO

CORPORATE PUBLICATIONS

PRESENTATIONS TO SENIOR MANAGEMENT

VENDOR PUBLICATIONS

SOFTWARE CATALOG

ISO NEWSLETTERS

JOSEPH W. CLINE
DIVISION STAFF MANAGER – EDP PLANNING AND
TECHNOLOGY SERVICES
SOUTHERN NEW ENGLAND TELEPHONE COMPANY

Mr. Cline joined Southern New England Telephone Company in 1972 and has been involved in Data Processing for over 15 years. In his current position he has responsibility for Corporate EDP Planning, End-User Computing, and EDP Hardware/Systems Software acquisition and support. In addition, his organization is currently marketing SNET developed software and formulating strategies for utilizing EDP as a competitive advantage in the marketplace. Mr. Cline has held similar positions in the Computer Operations and Application Divisions at SNET. He holds B.S. and M.B.A. degrees.

INPUT®

**SUCCESSFULLY MARKETING
INFORMATION SYSTEMS
WITHIN YOUR ORGANIZATION**

**Edward E. Lisi
Staff Manager
Corporate Relations
Southern New England
Telephone Company**

Communication Positioning Strategies

- A. Re-position ISO based on the
Reorganization of the Department

"Changing to Meet the Information
Needs of Our Business Even Better"

Communication Positioning Strategies

B. Position ISO as:

The Best Resource for SNET's
Information Needs

A Value-Added Service, Producing and
Managing a Corporate Asset

A Contributor to SNET's Financial
Health and "High-Tech" Image

Communication Objective #1

Communicate the Benefits of
Doing Business with ISO

Audience: SNET Managers
- ISO Users
- Non-Users

Communication Objective #2

Increase Awareness of ISO's
Role, Functions, Responsibilities,
and Capabilities

Audience: SNET Managers
- ISO Users
- Non-Users

Communication Objective #3

Demonstrate that ISO is
"Easy to do Business With"

Audience: SNET Managers

ISO Employees

Communication Objective #4

Develop a Sense of Accomplishment,
Pride and Unity within ISO

Audience: ISO Employees

Communication Objective #5

Foster Thinking of Information as
a Corporate Asset

Audience: All SNET Employees

Communication Tactic

"Merchandise" the Reorganization

Communication Tactic

Capitalize on Noteworthy ISO
Happenings and Capabilities.

Merchandise with Internal and
External Press.

Communication Tactic

Encourage our Vendors and
Affiliates to Highlight SNET's
ISO Services and Capabilities

Communication Tactic

Develop "Newsletters" for
Users

Open New Lines of Communication

Communication Tactic

SNET Managers Guide to ISO

Communication Tactics

- Develop incentives for ISO Experts to Publish Articles in Trade Publications and Speak at Trade Shows
- Periodic "State of the Department" Updates
- Continue to Merchandise "New Ventures"
- "Management Topics" -- Information as a Corporate Asset

**EDWARD E. LISI
STAFF MANAGER
CORPORATE RELATIONS
SOUTHERN NEW ENGLAND TELEPHONE COMPANY**

Edward E. Lisi joined Southern New England Telephone in 1979 after working in retail market management with Allied Stores Marketing Corporation and the R. H. Macy Company in New York City.

In the Corporate Relations department at SNET. Mr. Lisi has managed marketing communications for various SNET entities, his current account responsibilities include: the SONECOR Network division, Public Services, Information Systems, and the Customer Services Organization.

Mr. Lisi holds an M.B.A. in Marketing and Finance from the University of Connecticut and a Bachelor of Science in Commerce with a Finance major from Rider College, Lawrenceville, New Jersey.

